# APPENDIX B

# AIR QUALITY AND GHG ANALYSIS

# *CITY OF SAN JOSÉ DOWNTOWN STRATEGY 2040 - AIR QUALITY AND GREENHOUSE GAS EMISSIONS ASSESSMENT*

## *SAN JOSÉ, CALIFORNIA*

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## INTRODUCTION

This report examines air quality and greenhouse gas (GHG) emissions in the Planning Area and region, including analyzes of potential air quality and GHG impacts associated with the proposed San José Downtown Strategy (DTS) 2040 Plan. The City of San José is proposing to update the Downtown Strategy to Year 2040, consistent with the Envision San José 2040 General Plan, while allowing an increase in the amount of allowed development. Retail and hotel capacity envisioned for Downtown would be the same as envisioned in the Downtown Strategy 2000 and 2040 General Plan. Residential capacity would be increased by transferring residential units from outlying areas beyond the general vicinity of Downtown. The increase in office development (or jobs) would be achieved by transferring 10,000 jobs from Coyote Valley development identified in the General Plan.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Significance Criteria

Per Appendix G of the California Environmental Quality Act (CEQA) Guidelines and Bay Area Air Quality Management District (BAAQMD) recommendations, air quality and GHG impacts are considered significant if implementation of the DTS 2040 Plan would:

1) Conflict with or obstruct implementation of an applicable air quality plan;
2) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
3) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
4) Expose sensitive receptors to substantial pollutant concentrations;
5) Create objectionable odors affecting a substantial number of people;
6) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
7) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The BAAQMD adopted CEQA Guidelines in June 2010, which were revised in May 2011. Methodology and thresholds for criteria air pollutant impacts and community health risk, as set forth in the BAAQMD Guidelines, are utilized in this analysis. The following screening thresholds and significance criteria would be applicable to the DTS 2040 Plan.

Consistency with Clean Air Planning Efforts

According to the BAAQMD Air Quality Guidelines, proposed plans must show over the planning period of the plan that:

- The plan supports the primary goals of the current air quality plan;
- The plan incorporates current air quality plan control measures as appropriate to the plan area
- The plan does not disrupt or hinder implementation of any air quality plan control measures; and
- The rate of increase in vehicle miles traveled or vehicle trips (either measure may be used) within the plan area is equal to or lower than the rate of increase in population projected for the proposed plan.

Construction and Operation Emissions

The BAAQMD Air Quality Guidelines do not have thresholds related to direct and indirect criteria pollutant emissions resulting from plan implementation. Traffic resulting from the implementation of the plan would cause a significant local air quality impact if emissions of CO cause a projected exceedance of the ambient CO State standard of 9.0 parts per million (ppm) for 8-hour averaging period. This would be considered to cause or contribute substantially to an existing or projected air quality violation.

Exposure of New Residences to Toxic Air Contaminants

Unlike industrial or stationary sources of air pollution, residential development and other development where sensitive receptors would be located do not require air quality permits. Nonetheless, this type of development can expose people to unhealthy conditions. The BAAQMD Air Quality Guidelines Thresholds of Significance for plans with regard to community risk and hazard impacts are:

- Identify special overlay zones around existing and planned sources of toxic air contaminants (TACs) and particulate matter (PM) (including adopted risk reduction plan areas), and special overlay zones on each side of all freeways and high-volume roadways; and
- The plan must also identify goals, policies, and objectives to minimize potential impacts and create overlay zones around sources of TACs, PM, and hazards.

Odors

Odors are assessed based on the potential of the Plan to result in odor complaints. The BAAQMD Air Quality Guidelines Thresholds of Significance for plans with regard to odor impacts are:

- Identify special overlay zones around existing and planned sources of odors; and
- The plan must identify goals, policies, and objectives to minimize potential impacts and create buffer distances between sources of odors and receptors.

Greenhouse Gas Emissions

The BAAQMD thresholds were developed specifically for the Bay Area after considering the latest Bay Area GHG inventory and the effects of Assembly Bill (AB) 32 scoping plan measures that would reduce regional emissions. BAAQMD intends to achieve GHG reductions from new land use developments to close the gap between projected regional emissions with AB 32 scoping plan measures and the AB 32 targets. The BAAQMD GHG recommendations include a specific plan- and project-level GHG emission efficiency metric of 4.6 MT of $CO_2e$ per service population (future residences and full-time workers) per year. In addition, the City's Greenhouse Gas Reduction Strategy established an efficiency metric of 6.6 MT of $CO_2e$ per service population/year for 2020.

The basis for the GHG thresholds recommended in the BAAQMD CEQA Air Quality Guidelines was intended to meet goals of AB 32 for the year 2020. Since the plan development would occur beyond 2020, a threshold that addresses a future emission target was used. The basis for the 2020 BAAQMD-recommended thresholds was used to identify a 2030 threshold[1]. This assessment uses a "Substantial Progress" threshold of 2.6 meteric tons per service population for 2030. The basis of the BAAQMD thresholds were used to develop plan level thresholds for 2040. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO2e/year/service population (S.P.). This is calculated for 2030 based on the GHG reduction goals of EO B-30-15, taking into account the 1990 inventory and the projected 2030 statewide population and employment levels.[2] An efficiency metric of 1.7 MT CO2e/year/S.P. for 2040 was also calculated using the same method.

**Impact: Conflict with or obstruct implementation of an applicable air quality plan?**

[1] BAAQMD has not published a post-2020 threshold at the time of this analysis.

[2] Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), has prepared and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[3] The primary goals of the Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also developed CEQA Guidelines to assist lead agencies in evaluating the significance of air quality impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land use planning affects vehicle travel, which in turn affects region-wide emissions of air pollutants and GHG.

The proposed DTS 2040 Plan would result in up to an additional 5,860 residential units between 2015 and 2040. Daily vehicle miles traveled (VMT) for 2015 and 2040 were provided in the Traffic Impact Assessment using the total VMT accounting method. Table 1 identifies the VMT and population increases for the DTS 2040 Plan. Using 2015 as a baseline year, VMT attributable to implementation of the DTS 2040 Plan is anticipated to increase 260 percent. The increase in population is estimated to be 340 percent. As a result, VMT would not increase at a higher rate than population with implementation of the DTS 2040 Plan and this impact would be considered *less-than-significant*.

**TABLE 1 Summary of Existing and Future Vehicle Miles Traveled and Service Population**

| Metric/ Variable | Existing 2015 | Cumulative with DTS 2040 | Increase with DTS 2040 |
|---|---|---|---|
| Total VMT | 698,937 | 1,882,468 | 169% |
| Population | 12,548 | 42,704 | 240% |

Consistency with Bay Area Clean Air Plan Control Measures

Consistency of the DTS 2040 Plan with Clean Air Plan control measures is demonstrated by assessing whether the proposed Plan implements all of the applicable Clean Air Plan control measures. The 2017 Clean Air Plan includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. The control measures are divided into five categories that include:

- 40 measures to reduce stationary and area sources;
- 8 mobile source measures;

[3] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*

- 23 transportation control measures (including land use strategies);
- 4 building sector measures;
- 2 energy sector measures;
- 4 agriculture sector measures;
- 3 natural and working lands measures;
- 4 waste sector measures;
- 2 water sector measures; and
- 3 super-GHG pollutants measures.

In developing the control strategy, BAAQMD identified the full range of tools and resources available, both regulatory and non-regulatory, to develop each measure. Implementation of each control measure will rely on some combination of the following:

- Adoption and enforcement of rules to reduce emissions from stationary sources, area sources, and indirect sources.
- Revisions to the BAAQMD's permitting requirements for stationary sources.
- Enforcement of the California Air Resources Board (CARB) rules to reduce emissions from heavy-duty diesel engines.
- Allocation of grants and other funding by the Air District and/or partner agencies.
- Promotion of best policies and practices that can be implemented by local agencies through guidance documents, model ordinances, and other measures.
- Partnerships with local governments, other public agencies, the business community, non-profits, and other groups.
- Public outreach and education.
- Enhanced air quality monitoring.
- Development of land use guidance and CEQA guidelines, and Air District review and comment on Bay Area projects pursuant to CEQA.
- Leadership and advocacy.

This approach relies upon lead agencies to assist in implementing some of the control measures. A key tool for local agency implementation is the development of land use policies and implementing measures that address new development or redevelopment in local communities.

The BAAQMD, with assistance from ABAG and MTC, has prepared and implemented the Clean Air Plan to meet the applicable laws, regulations, and programs. The primary goals of the Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local

general plans. Land use planning affects vehicle travel, which in turn affects region-wide emissions of air pollutants and GHG.

The Guidelines set forth criteria for determining consistency with the Clean Air Plan. In general a plan is considered consistent if a) the plan supports the primary goals of the Clean Air Plan; b) includes control measures; and c) does not interfere with implementation of the Clean Air Plan measures. As a sustainable, transit-oriented development, the DTS 2040 Plan would generally be consistent with Clean Air Plan measures intended to reduce automobile and energy use, which are discussed below. Table 2 lists the relevant Clean Air Plan policies to the DTS 2040 Plan and indicates consistency with the policies.

As indicated in Table 2, the DTS 2040 Plan would include implementing policies and measures that are consistent with the applicable Clean Air Plan control measures. In addition, VMT growth in the DTS 2040 Plan Area would not outpace population growth.

## TABLE 2 BAAQMD Control Strategy Measures

| Control Measures | Consistency |
|---|---|
| **Transportation** | |
| TR1: Clean Air Teleworking Initiative | *Consistent:* The DTS 2040 Plan includes a Transportation Demand Management (TDM) strategies to reduce vehicle trips by promoting alternatives such as staggered or flexible work hours and telecommuting. |
| TR3: Local and Regional Bus Service | *Consistent:* The VTA has identified options for the Downtown San José BART station within the DTS 2040 Plan. The station would be conveniently located to provide access to several VTA bus lines. |
| TR4: Local and Regional Rail Service | *Consistent:* The VTA has identified options for the Downtown San José BART station within the DTS 2040 Plan. The stations would be conveniently located to provide access to VTA light rail service. |
| TR 5: Transit Efficiency and Use | *Consistent:* While this is mostly a regionally implemented TDM, the DTS 2040 Plan would improve connectivity to the region and City through investments in non-automobile infrastructure and transportation demand management measures promoting transit use, carpooling, walking and biking. Improved transportation services would connect to the Diridon Station, the future Downtown Bart Station, and other City and regional destinations. |
| TR8: Ridesharing, Last-Mile Connection | *Consistent:* The DTS 2040 Plan would promote the use of public transit, carpools, walking and biking in the area. From priority pedestrian and bicycle networks to TDM programs to reduce minimize vehicle trips and VMT, the DTS 2040 Plan would make it easier, more comfortable, and more efficient for employees and residents to walk, bike, carpool, or use transit. |
| TR9: Bicycle and Pedestrian Access and Facilities | *Consistent*: The DTS 2040 Plan would create a highly active and lively pedestrian and bicycle friendly environment with excellent connectivity to downtown destinations and regional transit. TDM measures would include bikeshare passes, biking facilities (e.g., parking, lockers, showers, bike sharing, bike valet), and City's continued participation in the Bay Area Bike Share program, which allows users to rent and return bicycles at various popular locations around the Downtown area. Neighborhoods are also close to walking and transit facilities to make it easy for residences to live in the Downtown area without a car. |
| TR10: Land Use Strategies | *Consistent:* The DTS 2040 Plan Area would transition into an innovative, sustainable, and intense transit-oriented district that promotes residential, office, retail, and hotel growth while providing access to walking, biking, and sustainable transportation systems. |
| TR13: Parking Policies | *Consistent:* The DTS 2040 Plan would improve connectivity to the region and City through investments in non-automobile infrastructure and transportation demand management measures promoting transit use, walking and biking. The DTS 2040 Plan would develop and implement parking strategies that reduce automobile travel through parking supply and pricing management. |

**Impact 2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

Construction Emissions

Implementation of the DTS 2040 Plan would, indirectly, result in short-term emissions from construction activities associated with subsequent development, including demolition, site grading, asphalt paving, building construction, and architectural coating. Emissions commonly associated with construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. During construction, fugitive dust, the dominant source of respirable particulate matter ($PM_{10}$) and fine particulate matter ($PM_{2.5}$) emissions, is generated when wheels or blades disturb surface materials. Demolition and renovation of buildings can also generate fugitive $PM_{10}$ and $PM_{2.5}$ emissions. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby.

Off-road construction equipment is often diesel-powered and can be a substantial source of nitrogen oxides ($NO_X$) emissions, in addition to $PM_{10}$ and $PM_{2.5}$ emissions. Worker commute trips and architectural coatings are dominant sources of reactive organic gases (ROG) emissions. The BAAQMD CEQA Air Quality Guidelines do not identify plan level thresholds that apply to construction. Although construction activities at individual project sites are expected to occur during a relatively short time period, the combination of temporary dust from activities and diesel exhaust from construction equipment poses both a health and nuisance impact to nearby receptors. In addition, $NO_X$ emissions during grading and soil import/export for large projects may exceed the BAAQMD $NO_X$ emission thresholds. Application of architectural coatings could result in significant ROG emissions. Without application of appropriate control measures to reduce construction dust and exhaust, construction period impacts would be considered a potentially significant impact.

Operational Emissions

Additionally, implementation of the DTS 2040 Plan would result in long-term area and mobile source emissions from operation and use of subsequent development. Implementation of the DTS 2040 Plan could include stationary sources of pollutants that would be required to obtain permits to operate in compliance with BAAQMD rules. These sources include, but are not limited to, gasoline stations, dry cleaners, internal combustion engines, and surface coating operations. The

permit process ensures that these sources would be equipped with the required emission controls and that, individually, these sources would result in a less than significant impact.

As discussed above, the BAAQMD Air Quality Guidelines do not have thresholds related to direct and indirect regional criteria pollutant emissions resulting from plan implementation. The BAAQMD CEQA Air Quality Guidelines only require emissions computations for project-level analysis. From a planning standpoint, this impact would be considered *less-than-significant*, since the DTS 2040 Plan would not cause significant increases in vehicle trips compared to population growth and would not interfere with Clean Air Plan control measures.

However, for informational purposes, estimated operational period emissions in tons per year and pounds per day are summarized in Table 3. Emissions were computed using the CalEEMod (version 2016.3.2) and CT-Emfac (CTAQ-RT-14-317.04.6) models combined with land use assumptions and traffic activity.

**Table 3. Annual Emissions Associated with the Downtown Strategy Plan**

| Scenario/Source | Emissions in Tons/year | | | | |
|---|---|---|---|---|---|
| | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** |
| 2015 | 77 | 485 | 133 | 56 | 8 |
| 2030 AmendGP | 157 | 436 | 90 | 31 | 13 |
| 2040 Ex GP | 205 | 444 | 107 | 37 | 16 |
| 2040 AmendGP | 242 | 510 | 120 | 41 | 18 |
| 2040 AmenGP Alt1 | 242 | 510 | 120 | 41 | 18 |
| 2040 AmendGP Alt2 | 249 | 522 | 124 | 42 | 19 |

*CalEEMod Modeling*

The modeling utilized to produce the results in Table 3 included emissions from area sources (e.g., consumer products and paints or solvents) and energy usage that were computed using CalEEMod. These emissions are based on the types and sized of the alnd uses entered into the model. Land uses entered into the model are described in Table 4.

Modifications were made to CalEEMod to account for project specifics or future conditions when development under DTS 2040 Plan would occur. These included the following:

**Table 4 CalEEMode Modeling Inputs**

| Land Use Scenario | Population | Dwelling Units | Jobs | Commercial (sf) | Retail (sf) | Hotel (rooms) |
|---|---|---|---|---|---|---|
| 2015 | 12548 | 5530 | 33608 | *1195649* | *258512* | *397* |
| 2030 Amended GP | *29698* | 14142 | 73442 | 9715649 | 1098512 | 2557 |
| 2040 Existing GP | 34104 | 15980 | 82108 | 12395649 | 1658512 | 3997 |
| 2040 Amended GP | 42704 | 19890 | 92108 | 15395649 | 1658512 | 3997 |
| 2040 Alternative 1 | 42704 | 19890 | 92108 | 15395649 | 1658512 | 3997 |
| 2040 Alternative 2 | 42704 | 19890 | 96108 | 16595649 | 1658512 | 3997 |

Note: 1 Numbers in italics are estimates based on Development Completed or Currently on File

2 2030 Amended GP based on interpolation of growth between 2015 and 2040 Amended GP

*Electricity Emisison Rate*. CalEEMod has a default rate of 641.3 pounds of $CO_2$ per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. The Existing 2015 run PG&E rate was updated to be the most recent rate reported in the California Climate Registry that was for 2013, which is 430 pounds of $CO_2$ per megawatt of electricity produced.[4] For the 2030 and 2040 modeling, emissions rates associated with electricity consumption were adjusted to account for PG&E's projected 2020 $CO_2$ intensity rate in place of 2040, since 2020 is the latest year published to date. This 2020 rate is based, in part, on the requirement of a renewable energy portfolio standard of 33 percent by the year 2020. The derived 2020 rate for PG&E was estimated at 289.84 pounds of $CO_2$ per megawatt of electricity delivered and is based on the California Public Utilities Commission (CPUC) GHG Calculator.[5]

*Energy Consumption.* Future development was assumed to meet the future 2019 Building Energy Efficiency Standards, recently approved by the California Energy Commision. These standards are expected to improve energy efficiency and lower GHG emissions by at least 30 percent[6].

*Hearths.* No wood burning was assumed in residential or non-residential land uses.

*Water Usage.* Improvements in water usage were assumed to be 20 percent for indoor uses and 40 percent for outdoor uses. Given the downtown setting and types of residences proposed, there were be little per capita outdoor water usage.

[4] See Climate Registry most current version of default emissions factors: http://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol. Accessed: October 30, 2015

[5] California Public Utilities Commission's GHG Calculator version 3c, October 7, 2010. Available on-line at: http://ethree.com/public_projects/cpuc2.php. Accessed: June 18, 2015.

[6] CEC. 2018. *2019 Building Energy Efficiency Standards - Frequently Asked Questions* . March.

*Mobile Sources Emissions Modeling*

The Caltrans CT-Emfac Model was used to compute mobile emission factors. This model uses the CARB EMFAC 2014 mobile emission factor model for on-road vehicles operating in California. The model produces emission factors for each 5-mph speed increment, along with rates for ROG evaporativce running losses and PM10 and PM2.5 emission for tire and brake wear. In addition, PM10 and PM2.5 emission factors were developed for entrained roadway dust, using factors developed by CARB for preperaing county-wide (Santa Clara County) area source emissions from on-road dust.

The mobile emission factors were combined with traffic data to compute daily emissions. Daily traffic activity was provided in vehicles miles travelled (VMT) for each speed bin (in 5 mph icrements) for each scenario evaluated. To compute ROG running loss emissions that aretime dependent, the number of hours was computed by dividing the VMT by the average travel speed.

*Modeling Output*

*Attachment 1* contains the CalEEMod output data and *Attachment 2* contains the CT-Emfac emission factors and VMT-by-speed-bin calculations and overall mobile emissions calculations.

> ***Mitigation Measure AQ-1:*** Include construction equipment exhaust controls and measures to control dust and exhaust during construction.
>
> During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less than significant level. The contractor shall implement the following best management practices that are required of all projects:
>
> Basic Measures
> All construction emissions would implement the following measures:
>
> 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
>
> 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
>
> 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
>
> 4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Applicable Enhanced Control Measures

Enhanced control measures are required for individual projects that have significant emissions. These include the following measures:

9. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
10. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph and visible dust extends beyond site boundaries.
11. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction adjacent to sensitive receptors. Wind breaks should have at maximum 50 percent air porosity.
12. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
13. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
14. Avoid tracking of visible soil material on to public roadways by employing the following measures if necessary: (1) Site accesses to a distance of 100 feet from public paved roads shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel and (2) washing truck tires and construction equipment of prior to leaving the site.
15. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
16. Minimizing the idling time of diesel powered construction equipment to two minutes.

Exhaust Control Measures

Projects with significant exhaust-related emisisons would implement the following measures:

17. Based on project specific construction assessments, a plan shall be developed that demonstrates off-road equipment (more than 25 horsepower) on on-road haul trucks to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve appropriate project wide fleet-average NOx and PM10/PM2.5 reductions, such that emissions do not exceed BAAQMD construction period significance thresholds. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.

18. Provide line power to the site during the early phases of construction to minimize the use of diesel powered stationary equipment, such as generators.

19. All on-road heavy-duty trucks with a gross vehicle weight rating of 33,000 pounds or greater (EMFAC2007 Category HDDT) used at the project site (such as haul trucks, water trucks, dump trucks concrete trucks) shall be model year 2010 or newer.

20. Phasing of construction activities to reduce average daily emissions.

Effectiveness of Mitigation: Emissions from on-site off-road equipment operation and on- or near-site truck travel would be reduced by over 50 percent for particulate matter and over 20 percent for NOx.. Measures to control fugitive dust would exceed the basic control measures recommended by BAAQMD in their CEQA Air Quality Guidelines.

**Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

Emissions of ozone precursor pollutants, PM10 and PM2.5 that lead to regional air quality impacts are addressed under Impact 2 above. Effects of fugitive dust emissions of PM10 and PM2.5 are also addressed under Impact 2 above. Emissions of carbon monoxide (CO) are addressed at the local level, since emissions from traffic can directly affect ambient concentrations, for which there are ambient air quality standards.

Monitoring data from all ambient air quality monitoring stations in the Bay Area indicate that existing CO levels are currently below national and California ambient air quality standards. Monitored CO levels have decreased substantially since 1990 as newer vehicles with greatly improved exhaust emission control systems have replaced older vehicles. The Bay Area has been designated as an attainment area for the CO standards. The highest measured levels in San Jose (the closest monitoring stations to the Planning Area) during the past three years are less than 2.0 ppm for 8-hour and less than 3.0 for the 1-hour averaging periods, compared with most stringent State and Federal standards of 9.0 ppm and 20 ppm, respectively.

Even though current CO levels in the Bay Area are well below ambient air quality standards, and there have been no exceedances of CO standards in the Bay Area since 1991, elevated levels of CO still warrant analysis. CO hotspots (occurrences of localized high CO concentrations) could still occur near busy congested intersections. Recognizing the relatively low CO concentrations experienced in the Bay Area, the BAAQMD's CEQA Air Quality Guidelines state that a project would have a less-than-significant impact if it would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour. Peak hour traffic volumes for the DTS 2040 Plan would be far less. Since intersections affected by the project would have volumes less than the threshold of 44,000 vehicles per hour, the impact of the project related to localized CO concentrations would therefore be less than significant.

**Impact 4: Expose project sensitive receptors to substantial pollutant concentrations?**

<u>Exposure to DTS 2040 Plan Construction</u>

Subsequent land use activities associated with implementation of the DTS 2040 Plan could potentially include short-term construction sources of TACs and long-term operational sources of TACs, including stationary and mobile sources.

Implementation of the DTS 2040 Plan would result in the potential construction of a variety of projects. This construction would result in short-term emissions of DPM, a TAC. Construction would result in the generation of DPM emissions from the use of off-road diesel equipment

required for site grading and excavation, paving, and other construction activities. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer. The calculation of cancer risk associated with exposure to TACs is typically based on a long-term exposure (e.g., 30- or 70-year period). The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. Cancer risk and $PM_{2.5}$ exposure would have to be analyzed through project-level analysis to identify the potential for significant impacts and measures to reduce those impacts to less-than-significant. Health risks associated with temporary construction would, therefore, be considered potentially significant. Implementation of Mitigation Measure AQ-1, described for Impact 2, would reduce this impact to less-than-significant.

New Long-Term Operational Sources

Development under the DTS 2040 Plan could include new sources of TACs and PM2.5 emissions that could expose existing or new sensitive receptors to significant community risk levels. Common sources include diesel engiens used to power emergency generaotrs or fire pumps. Typically, these new sources would be evaluated through the BAAQMD permit process or the CEQA process to identify and mitigate any significant exposures. However, some sources that would not undergo such a review, such as truck loading docks or truck parking areas, transit stations used frequently by diesel-powered buses or trains, may have the potential to cause significant increases in TAC exposure.

Exposure of New Sensitive Receptors to Long-Term Operational Sources

According to the BAAQMD CEQA Air Quality Guidelines, for a plan to have a less-than-significant impact with respect to TACs, overlay zones must be established around existing and proposed land uses that would emit these air pollutants. Overlay zones to avoid TAC impacts must be reflected in local plan policies, land use maps, or implementing ordinances.

The BAAQMD CEQA Air Quality Guidelines consider exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk or hazard, to be significant. For cancer risk, which is a concern with DPM and other mobile-source TACs, the BAAQMD Risk Management Policy considers an increased risk of contracting cancer that is 10 in one million chances or greater, to be significant risk for a single source. The BAAQMD CEQA Guidelines also consider exposure to annual $PM_{2.5}$ concentrations that exceed 0.3 micrograms per cubic meter ($\mu g/m^3$) from a single source to be significant. Non-cancer risk would be considered significant if

the computed Hazard Index is greater than 1.0.[7] For cumulative sources, the BAAQMD CEQA Guidelines consider 100 in one million excess cancer risk, $PM_{2.5}$ concentrations that exceed 0.8 $\mu g/m^3$, and non-cancer Hazard Index greater than 10.0 to be significant.

The DTS 2040 Plan would permit and facilitate the development of new sensitive receptors, such as new homes, in locations near arterial and collector roadways, highways, and stationary sources of TAC emissions. Screening levels indicate that sensitive receptors within the DTS 2040 Plan Area would be exposed to levels of TACs and/or $PM_{2.5}$ that could cause an unacceptable cancer risk or hazard near highways and stationary sources. Though not necessarily a CEQA issue due to the CBIA v. BAAQMD decision, the potential effect of existing TAC sources on future projects is discussed to comply with General Plan Policy MS-11.1 to "require completion of air quality modeling for sensitive land uses such as new residential developments that are located near sources of pollution such as freeways and industrial uses. Require new residential development projects and projects categorized as sensitive receptors to incorporate effective mitigation into project designs or be located an adequate distance from sources of TACs to avoid significant risks to health and safety."

The DTS 2040 Plan area includes TAC sources in the form of freeways (i.e., Highway 85 and Interstate 280), many busy local roadways, numerous stationary sources and railroads where diesel-powered locomotives operate. BAAQMD's Planning Healthy Places identifies ares with potentially significant TAC or air pollutant exposures[8]. Figure 1 illustrates the approximate areas where BAAQMD recommends that health risks from air pollution be mitigated through best management practices or where further studies are needed as reported by BAAQMD. Development in these areas could affect future sensitive receptors in the DTS 2040 Plan Area.

As shown in Figure 1, much of the DTS 2040 Plan area is affected by sources of TACs or air pollutants, potentially resulting in unhealthy exposures. This would be a significant impact.

BAAQMD provides tools to further evaluate effects from the various sources. These are described below.

Stationary Sources

The DTS 2040 Plan has numerous permitted stationary sources. These sources are located throughout the DTS 2040 Plan Area, but mostly in industrial and commercial areas. The impact of these sources can only be addressed on a project-by-project basis, since impacts are generally

[7] The Hazard Index is the ratio of the computed receptor exposure level to the level known to cause acute or chronic adverse health impacts, as identified by BAAQMD.

[8] BAAQMD. 2016. *Planning Healthy Places – A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning* May. See: http://www.baaqmd.gov/plans-and-climate/planning-healthy-places, accessed June 1, 2018.

localized. To assist lead agencies, BAAQMD has provided a database of permitted sources for each County called the. The database is contained in Google Earth's *Stationary Source Screening Analysis Tool* that allows a user to identify stationary sources within 1,000 feet of a receptor. The database can then be accessed through Google Earth. A stationary source information request can be submitted to BAAQMD to obtain updated screening levels of cancer risk, hazards, and $PM_{2.5}$ concentrations. These levels can then be adjusted levels for distance using the *Cancer Risk and Hazard Distance Adjustment Multiplier*. This allows many of the sources to be screened out of any additional analysis. Stationary sources that show the potential for significant community risk impacts after this first level of review are further analyzed by contacting BAAQMD for additional emissions information. A refined modeling analysis would be required if there are sources that still have potentially significant impacts after this level of review. A refined analysis would include dispersion modeling of the source using emissions and source information provided by BAAQMD. If the source still has significant community risk impacts following this level of effort, then risk reduction strategies would have to be implemented by the project on a case-by-case basis, including but not limited to, mechanical air filtration systems.

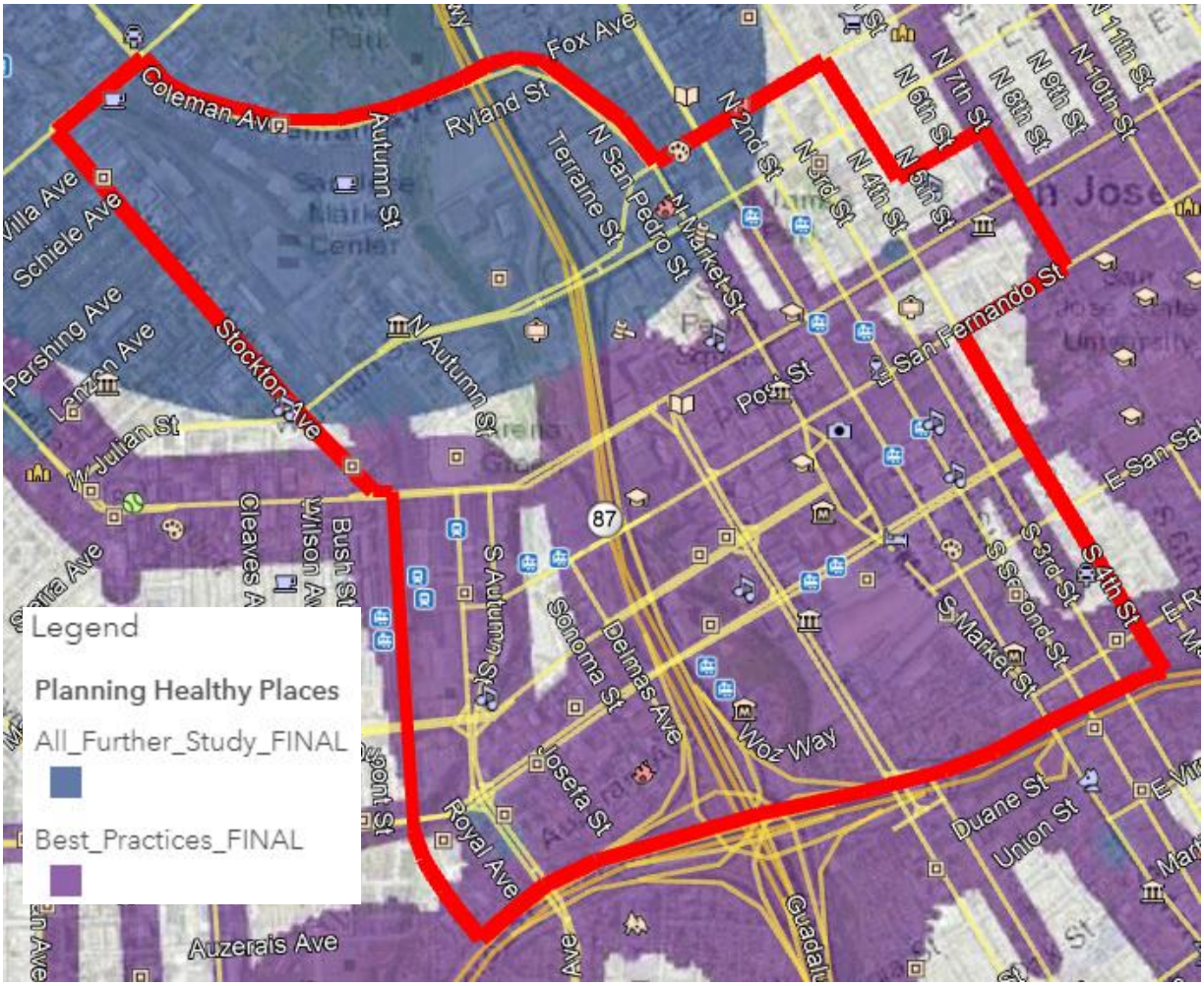
Surface Streets

Traffic on high volume roadways (such as Santa Clara Street, San Carlos Street, Julian Street, Almaden Boulevard, Bird Avenue, and First Street) are sources of TAC emissions that may adversely affect sensitive receptors in close proximity to the roadway. For roadways, BAAQMD has provided the *Roadway Screening Analysis Calculator* to determine if roadways with traffic volumes of over 10,000 vehicles per day may have a significant effect. Roadways that have increased cancer risks or PM2.5 conentrations that are identified as signifnat could be assessed using refined modeling techniques. These include modeling emissions with the latest version of the EMFAC model and combining those with projected traffic conditions in a dispersion model that used hourly meteorolical data collected at San Jose International Airport.

Railroads

BAAQMD does not provide screening tools to evaluate diesel-powered locomotives operating on railroads. Therefore, refined modeling techniques that utilize emissions calculations and dispersion modeling need to be employed for developments near active railroads.

**Figure 1. BAAQMD's Planned Healthy Places in DTS 2040 Plan (Shaded areas indicate potentially significant TAC/PM2.5 exposure)**




State Route 87 and Interstate 280

State Route 87 (S.R. 87) is in the center of the DTS 2040 Plan Area and Interstate 280 (I-280) is adjacent to the southern boundary of the DTS 2040 Plan Area. The primary source of TAC emissions is from diesel trucks that emit DPM. Additional TAC emissions come from gasoline fueled vehicles which emit organic TAC compounds. $PM_{2.5}$, which is also of concern, is emitted from vehicle exhaust, tire and brake wear, and from re-suspended roadway dust.

BAAQMD provides a Highway Screening Analysis Tool to assess screening levels associated with State highways. This tool provides screening levels for first- and second floor level exposures on both sides of the highways for set distances from the edge of the roadway. As with local roadway assessment, refined modeling can be conducted using traffic, emissions and dispersion modeling with representative meteorological data.

Summary

The DTS 2040 Plan would allow new land uses that include sensitive receptors that could be exposed to existing TACs and air pollutants that result in increased cancer risk and/or elevated annual PM2.5 exposures. New developments could also include sources of TACs and air pollutants or indirectly create these sources (e.g., transit stations) that could expose both existing and new sensitive receptors. This impact would be potentially significant. Implementation of Mitigation Measure AQ-2 would reduce this impact to a level of less than significant.

**Mitigation Measure AQ-2** The following measures shall be utilized in site planning and building designs to reduce TAC and $PM_{2.5}$ exposure where new receptors are located within the setback distances identified above:

- Future development under the DTS 2040 Plan that includes sensitive receptors (such as residents, schools, hospitals, daycare centers, or retirement homes) located within the setback distances from S.R. 87 and I-280, local roadways, and stationary sources shall require site-specific analysis to quantify the level of TAC and $PM_{2.5}$ exposure. These are identified as the shaded areas in Figure 1. This analysis shall be conducted following procedures outlined by BAAQMD. If the site-specific analysis reveals significant exposures, such as cancer risk greater than 10 in one million acute or chronic hazards with a Hazard Index greater than 1.0, or annual $PM_{2.5}$ exposures greater than 0.3 $\mu g/m^3$, or a significant cumulative health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a Hazard Index greater than 10.0, or annual $PM_{2.5}$ exposures greater than 0.8 $\mu g/m^3$, additional measures such as those detailed below shall be employed to reduce the risk to belo w the threshold. If this is not possible, the sensitive receptors shall be relocated.
- Future developments that would include TAC sources would be evaluated through the CEQA process or BAAQMD permit process to ensure that they do not cause a significant health risk in terms of excess cancer risk greater than 10 in one million, acute or chronic hazards with a Hazard Index greater than 1.0, or annual $PM_{2.5}$ exposures greater than 0.3 $\mu g/m^3$, or a significant cumulative health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a Hazard Index greater than 10.0, or annual $PM_{2.5}$ exposures greater than 0.8 $\mu g/m^3$.
- For significant cancer risk exposure, as defined by BAAQMD, indoor air filtration systems shall be installed to effectively reduce particulate levels to a less-than-significant level. Project sponsors shall submit performance specifications and design details to demonstrate that lifetime residential exposures would result in

less-than-significant cancer risks (less than 10 in one million chances or 100 in one million for cumulative sources), Hazard Index or $PM_{2.5}$ concentration.

- Air filtration systems installed shall be rated MERV-13 or higher and a maintenance plan for the air filtration system shall be implemented.
- Trees and/or vegetation shall be planted between sensitive receptors and pollution sources, if feasible. Trees that are best suited to trapping particulate matter shall be planted, including the following: Pine (Pinus nigra var. maritime), Cypress (X Cupressocyparis leylandii), Hybrid poplar (Populus deltoids X trichocarpa), and Redwoods (Sequoia sempervirens).
- Sites shall be designed to locate sensitive receptors as far as possible from any freeways, roadways, refineries, diesel generators, distribution centers, and rail lines.
- Operable windows, balconies, and building air intakes shall be located as far away from these sources as feasible. If near a distribution center, residents shall not be located immediately adjacent to a loading dock or where trucks concentrate to deliver goods.

**Impact 5: Create objectionable odors affecting a substantial number of people?**

Subsequent land use activities associated with implementation of the DTS 2040 Plan could allow for the development of uses that have the potential to produce odorous emissions either during the construction or operation of future development. Additionally, subsequent land use activities may allow for the construction of sensitive land uses (i.e., residential development, schools, parks, offices, etc.) near existing or future sources of odorous emissions. Future construction activities could result in odorous emissions from diesel exhaust associated with construction equipment. However, because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, exposure of sensitive receptors to these emissions would be limited.

Significant sources of offending odors are typically identified based on complaint histories received and compiled by BAAQMD. It is difficult to identify sources of odors without requesting information by specific facility from BAAQMD. Typical large sources of odors that result in complaints are wastewater treatment facilities, landfills including composting operations, food processing facilities, and chemical plants. Other sources, such as restaurants, paint or body shops, and coffee roasters typically result in localized sources of odors. Table 5 identifies screening buffers included in the BAAQMD CEQA Air Quality Guidelines that could apply to the Plan Area.

**TABLE 5 Odor Screening Distances for the NBPP**

| Land Use/Type of Operation | Project Screening Distance |
|---|---|
| Wastewater Treatment Plant | 2 miles |
| Wastewater Pumping Facilities | 1 mile |
| Sanitary Landfill | 2 miles |
| Transfer Station | 1 mile |
| Composting Facility | 1 mile |
| Asphalt Batch Plant | 2 miles |
| Chemical Manufacturing | 2 miles |
| Fiberglass Manufacturing | 1 mile |
| Painting/Coating Operations | 1 mile |
| Coffee Roaster | 1 mile |
| Food Processing Facility | 1 mile |
| Green Waste and Recycling Operations | 1 mile |

According to the BAAQMD CEQA Guidelines, an odor source with five or more confirmed complaints per year averaged over three years is considered to have a significant impact. Future construction activities in the DTS 2040 Plan Area could result in odorous emissions from diesel exhaust associated with construction equipment. Because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, exposure of sensitive receptors to these emissions would be limited.

Subsequent land use activities associated with implementation of the DTS 2040 Plan could allow for the development of uses that have the potential to produce odorous emissions either during the construction or operation of future development. Additionally, subsequent land use activities may allow for the construction of sensitive land uses (i.e., residential development, schools, parks, offices, etc.) near existing or future sources of odorous emissions. However, significant sources of odors are not proposed as part of the DTS 2040 Plan. Further, the City would implement General Plan Policy MS-12.1 and MS-12.2 as part of the development review process to ensure that residents are protected from odors that might be associated with implementation of the DTS 2040 Plan.

**Impact 6: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

The BAAQMD CEQA Air Quality Guidelines contain methodology and thresholds of significance for evaluating GHG emissions from land use type projects. As discussed above, the City of San José has adopted qualified GHG reduction program (GGRP). This program meets the requirements of a GHG Reduction Strategy under State CEQA Guidelines Section 15183.5. The program includes a goal to improve communitywide emissions efficiency (per-service population – residents and full-time employees) by 30 percent over 2005 levels by 2030. The City intends to achieve GHG reductions from new land use developments to close the gap between projected regional emissions with AB 32 scoping plan measures and the AB 32 targets. The City suggests applying a 2020 GHG efficiency threshold of 6.6 MT of $CO_2e$ per year per service population (S.P.). Projects with emissions above the threshold would be considered to have a cumulatively significant impact.

GHG emissions were computed for the full build-out traffic scenario, with operational emissions in 2030 using the California Emissions Estimator Model Version 2016.3.2 (CalEEMod) and the CT-EMFAC model, as described under Impact 2. DTS 2040 Plan land use types and size were input to CalEEMod. CalEEMod predicts emissions of GHG in the form of equivalent carbon dioxide emissions or $CO_2e$. Since daily trip generation rates by land use type were not available, mobile emissions were calculated using the VMT-by-speed-bin data and the CARB EMFAC2014 emissions factor model.

Construction Period Emissions

The BAAQMD does not have an adopted Threshold of Significance for construction-related GHG emissions. BAAQMD encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable, including, but not limited to: using alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet, using local building materials of at least 10 percent, and recycling or reusing at least 50 percent of construction waste or demolition materials. The DTS 2040 Plan would require that all new construction, additions, and alterations recycle or salvage 65 percent of nonhazardous construction and demolition debris generated at the site.

Operational Period Emissions

The CalEEMod model was used to predict GHG emissions associated with operation of fully developed sites under the DTS 2040 Plan aside from mobile emissions. Daily trip generation rates were not available by each specific land use proposed under the Plan, so the VMT-by-speed bin

data and the CT-EMFAC emissions factor model was used to estimate vehicle emissions associated with operation of the DTS 2040 Plan.

The service population rate for this DTS 2040 Plan is the annual GHG emissions expressed in metric tons divided by the estimated number of new residents and employees. The estimated 2040 service population for the proposed DTS 2040 Plan scenarios varied based on the populations and jobs forecast.

Table 6 presents the results of the CalEEMod model analysis in terms of annual metric tons of equivalent $CO_2e$ emissions (MT of $CO_2e$/yr) and service population values. The CalEEMod modeling data are provided in *Attachment 1*.

## Table 6. Annual Operational GHG Emissions

| Downtown San Jose Strategy - 2040 | | | | | |
|---|---|---|---|---|---|
| Scenario/Source | CO2e (in metric tons) | Daily VMT | Population | Employment | Per Capita |
| 2015 | | 698937 | 12548 | 33608 | 2.83 |
| Area | 291 | | | | |
| Energy | 15,083 | | | | |
| Mobile | 111,727 | | | | |
| Waste | 2,084 | | | | |
| Water | 1,263 | | | | |
| | 130,448 | | | | |
| 2030 AmendGP | | 220793 | 29698 | 73442 | 2.12 |
| Area | 176 | | | | |
| Energy | 50,729 | | | | |
| Mobile | 156,768 | | | | |
| Waste | 7,280 | | | | |
| Water | 3,449 | | | | |
| | 218,402 | | | | |
| 2040 Ex GP | | 1690490 | 34104 | 82108 | 2.21 |
| Area | 199 | | 3.3 | | |
| Energy | 66,036 | | | | |
| Mobile | 177,295 | | | | |
| Waste | 9,162 | | | | |
| Water | 4,275 | | | | |
| | 256,967 | | | | |
| 2040 AmendGP | | 1882468 | 42704 | 92108 | 2.17 |
| Area | 247 | | 3.0 | | |
| Energy | 77,801 | | | | |
| Mobile | 197,633 | | | | |
| Waste | 11,022 | | | | |
| Water | 5,253 | | | | |
| | 291,956 | | | | |
| 2040 AmenGP Alt1 | | 1878383 | 42704 | 92108 | 2.17 |
| Area | 247 | | | | |
| Energy | 77,801 | | | | |
| Mobile | 197,656 | | | | |
| Waste | 11,022 | | | | |
| Water | 5,253 | | | | |
| | 291,979 | | | | |
| 2040 AmendGP Alt2 | | 1938773 | 42704 | 96108 | 2.18 |
| Area | 247 | | | | |
| Energy | 81,087 | | | | |
| Mobile | 204,021 | | | | |
| Waste | 11,471 | | | | |
| Water | 5,517 | | | | |
| | 302,343 | | | | |

**Attachment 1: CalEEMod Output Worksheets**

# San Jose Downtown Strategy - Existing

**Santa Clara County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 1,195.65 | 1000sqft | 27.45 | 1,195,650.00 | 0 |
| Hotel | 397.00 | Room | 13.23 | 576,444.00 | 0 |
| Apartments High Rise | 5,530.00 | Dwelling Unit | 89.19 | 5,530,000.00 | 15816 |
| Strip Mall | 258.51 | 1000sqft | 5.93 | 258,510.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2015 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 430 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E rate

Land Use - Based on PD Table 1.0-2 (Dev Completed or on file)

Construction Phase - No construction

Off-road Equipment - No construction

Vehicle Trips -

Woodstoves - No wood burning - 1770 nat gas

Water And Wastewater - all WTP treatment

Area Mitigation -

Energy Mitigation - New building code requirements

Water Mitigation - Water conservation

Waste Mitigation - Redcue waste by 20 percent

Energy Use - Historical for existing uses

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblEnergyUse | NT24E | 3,054.10 | 3,054.10 |
| tblEnergyUse | T24E | 332.81 | 332.81 |
| tblEnergyUse | T24E | 6.11 | 6.11 |
| tblEnergyUse | T24E | 2.05 | 2.05 |
| tblEnergyUse | T24E | 2.76 | 2.76 |
| tblEnergyUse | T24NG | 5,484.45 | 5,484.45 |
| tblEnergyUse | T24NG | 16.31 | 16.31 |
| tblEnergyUse | T24NG | 39.56 | 39.56 |
| tblEnergyUse | T24NG | 2.37 | 2.37 |
| tblFireplaces | FireplaceWoodMass | 228.80 | 0.00 |
| tblFireplaces | NumberGas | 829.50 | 1,770.00 |
| tblFireplaces | NumberWood | 940.10 | 0.00 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 430 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |

## 2.0 Emissions Summary

### 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 35.8419 | 0.6838 | 41.9296 | 3.3900e-003 | | 0.2395 | 0.2395 | | 0.2395 | 0.2395 | 0.0000 | 288.0709 | 288.0709 | 0.0741 | 4.0500e-003 | 291.1301 |
| Energy | 0.5042 | 4.4427 | 2.8194 | 0.0275 | | 0.3483 | 0.3483 | | 0.3483 | 0.3483 | 0.0000 | 14,994.5860 | 14,994.5860 | 0.7704 | 0.2311 | 15,082.7077 |
| Mobile | 20.9892 | 75.6877 | 241.2887 | 0.4884 | 37.2538 | 0.8476 | 38.1015 | 9.9792 | 0.8026 | 10.7818 | 0.0000 | 44,417.6792 | 44,417.6792 | 2.2711 | 0.0000 | 44,474.4565 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 841.3062 | 0.0000 | 841.3062 | 49.7198 | 0.0000 | 2,084.3005 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 212.9985 | 888.1252 | 1,101.1237 | 0.7930 | 0.4756 | 1,262.6763 |
| **Total** | **57.3352** | **80.8141** | **286.0378** | **0.5193** | **37.2538** | **1.4354** | **38.6892** | **9.9792** | **1.3904** | **11.3696** | **1,054.3047** | **60,588.4613** | **61,642.7660** | **53.6284** | **0.7107** | **63,195.2710** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 35.8196 | 0.4930 | 41.8484 | 2.1700e-003 | | 0.2240 | 0.2240 | | 0.2240 | 0.2240 | 0.0000 | 67.1053 | 67.1053 | 0.0699 | 0.0000 | 68.8514 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Energy | 0.5042 | 4.4427 | 2.8194 | 0.0275 | | 0.3483 | 0.3483 | | 0.3483 | 0.3483 | 0.0000 | 14,880.0843 | 14,880.0843 | 0.7627 | 0.2295 | 14,967.5368 |
| Mobile | 20.9892 | 75.6877 | 241.2887 | 0.4884 | 37.2538 | 0.8476 | 38.1015 | 9.9792 | 0.8026 | 10.7818 | 0.0000 | 44,417.6792 | 44,417.6792 | 2.2711 | 0.0000 | 44,474.4565 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 673.0450 | 0.0000 | 673.0450 | 39.7758 | 0.0000 | 1,667.4404 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 212.9985 | 888.1252 | 1,101.1237 | 0.7930 | 0.4756 | 1,262.6763 |
| **Total** | **57.3129** | **80.6233** | **285.9566** | **0.5181** | **37.2538** | **1.4200** | **38.6738** | **9.9792** | **1.3750** | **11.3542** | **886.0435** | **60,252.9940** | **61,139.0375** | **43.6725** | **0.7051** | **62,440.9614** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.04** | **0.24** | **0.03** | **0.23** | **0.00** | **1.07** | **0.04** | **0.00** | **1.11** | **0.14** | **15.96** | **0.55** | **0.82** | **18.56** | **0.79** | **1.19** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 20.9892 | 75.6877 | 241.2887 | 0.4884 | 37.2538 | 0.8476 | 38.1015 | 9.9792 | 0.8026 | 10.7818 | 0.0000 | 44,417.6792 | 44,417.6792 | 2.2711 | 0.0000 | 44,474.4565 |
| Unmitigated | 20.9892 | 75.6877 | 241.2887 | 0.4884 | 37.2538 | 0.8476 | 38.1015 | 9.9792 | 0.8026 | 10.7818 | 0.0000 | 44,417.6792 | 44,417.6792 | 2.2711 | 0.0000 | 44,474.4565 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |

| | | | | | |
|---|---|---|---|---|---|
| Apartments High Rise | 23,226.00 | 27,539.40 | 20184.50 | 54,062,595 | 54,062,595 |
| General Office Building | 13,188.02 | 2,941.30 | 1255.43 | 23,944,241 | 23,944,241 |
| Hotel | 3,243.49 | 3,251.43 | 2362.15 | 5,925,349 | 5,925,349 |
| Strip Mall | 11,457.16 | 10,867.76 | 5281.36 | 16,156,032 | 16,156,032 |
| Total | 51,114.67 | 44,599.89 | 29,083.44 | 100,088,217 | 100,088,217 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments High Rise | 10.80 | 4.80 | 5.70 | 31.00 | 15.00 | 54.00 | 86 | 11 | 3 |
| General Office Building | 9.50 | 7.30 | 7.30 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| Hotel | 9.50 | 7.30 | 7.30 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Strip Mall | 9.50 | 7.30 | 7.30 | 16.60 | 64.40 | 19.00 | 45 | 40 | 15 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments High Rise | 0.581066 | 0.044264 | 0.192756 | 0.115658 | 0.019411 | 0.004878 | 0.012376 | 0.018919 | 0.001909 | 0.001745 | 0.005487 | 0.000584 | 0.000947 |
| General Office Building | 0.581066 | 0.044264 | 0.192756 | 0.115658 | 0.019411 | 0.004878 | 0.012376 | 0.018919 | 0.001909 | 0.001745 | 0.005487 | 0.000584 | 0.000947 |
| Hotel | 0.581066 | 0.044264 | 0.192756 | 0.115658 | 0.019411 | 0.004878 | 0.012376 | 0.018919 | 0.001909 | 0.001745 | 0.005487 | 0.000584 | 0.000947 |
| Strip Mall | 0.581066 | 0.044264 | 0.192756 | 0.115658 | 0.019411 | 0.004878 | 0.012376 | 0.018919 | 0.001909 | 0.001745 | 0.005487 | 0.000584 | 0.000947 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 9,890.7474 | 9,890.7474 | 0.6671 | 0.1380 | 9,948.5507 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 10,005.2491 | 10,005.2491 | 0.6748 | 0.1396 | 10,063.7216 |
| NaturalGas Mitigated | 0.5042 | 4.4427 | 2.8194 | 0.0275 | | 0.3483 | 0.3483 | | 0.3483 | 0.3483 | 0.0000 | 4,989.3369 | 4,989.3369 | 0.0956 | 0.0915 | 5,018.9860 |
| NaturalGas Unmitigated | 0.5042 | 4.4427 | 2.8194 | 0.0275 | | 0.3483 | 0.3483 | | 0.3483 | 0.3483 | 0.0000 | 4,989.3369 | 4,989.3369 | 0.0956 | 0.0915 | 5,018.9860 |

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 4.77761e+007 | 0.2576 | 2.2015 | 0.9368 | 0.0141 | | 0.1780 | 0.1780 | | 0.1780 | 0.1780 | 0.0000 | 2,549.5171 | 2,549.5171 | 0.0489 | 0.0467 | 2,564.6676 |
| General Office Building | 1.95678e+007 | 0.1055 | 0.9592 | 0.8057 | 5.7600e-003 | | 0.0729 | 0.0729 | | 0.0729 | 0.0729 | 0.0000 | 1,044.2146 | 1,044.2146 | 0.0200 | 0.0191 | 1,050.4198 |
| Hotel | 2.5541e+007 | 0.1377 | 1.2520 | 1.0517 | 7.5100e-003 | | 0.0952 | 0.0952 | | 0.0952 | 0.0952 | 0.0000 | 1,362.9652 | 1,362.9652 | 0.0261 | 0.0250 | 1,371.0647 |
| Strip Mall | 611650 | 3.3000e-003 | 0.0300 | 0.0252 | 1.8000e-004 | | 2.2800e-003 | 2.2800e-003 | | 2.2800e-003 | 2.2800e-003 | 0.0000 | 32.6400 | 32.6400 | 6.3000e-004 | 6.0000e-004 | 32.8340 |
| **Total** | | **0.5042** | **4.4427** | **2.8194** | **0.0275** | | **0.3483** | **0.3483** | | **0.3483** | **0.3483** | **0.0000** | **4,989.3369** | **4,989.3369** | **0.0956** | **0.0915** | **5,018.9860** |

### Mitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 4.77761e+007 | 0.2576 | 2.2015 | 0.9368 | 0.0141 | | 0.1780 | 0.1780 | | 0.1780 | 0.1780 | 0.0000 | 2,549.5171 | 2,549.5171 | 0.0489 | 0.0467 | 2,564.6676 |
| General Office Building | 1.95678e+007 | 0.1055 | 0.9592 | 0.8057 | 5.7600e-003 | | 0.0729 | 0.0729 | | 0.0729 | 0.0729 | 0.0000 | 1,044.2146 | 1,044.2146 | 0.0200 | 0.0191 | 1,050.4198 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hotel | 2.5541e+007 | 0.1377 | 1.2520 | 1.0517 | 7.5100e-003 | | 0.0952 | 0.0952 | | 0.0952 | 0.0952 | 0.0000 | 1,362.9652 | 1,362.9652 | 0.0261 | 0.0250 | 1,371.0647 |
| Strip Mall | 611650 | 3.3000e-003 | 0.0300 | 0.0252 | 1.8000e-004 | | 2.2800e-003 | 2.2800e-003 | | 2.2800e-003 | 2.2800e-003 | 0.0000 | 32.6400 | 32.6400 | 6.3000e-004 | 6.0000e-004 | 32.8340 |
| **Total** | | **0.5042** | **4.4427** | **2.8194** | **0.0275** | | **0.3483** | **0.3483** | | **0.3483** | **0.3483** | **0.0000** | **4,989.3369** | **4,989.3369** | **0.0956** | **0.0915** | **5,018.9860** |

## 5.3 Energy by Land Use - Electricity

### Unmitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 2.28298e+007 | 4,452.8304 | 0.3003 | 0.0621 | 4,478.8535 |
| General Office Building | 2.1314e+007 | 4,157.1742 | 0.2804 | 0.0580 | 4,181.4695 |
| Hotel | 4.39039e+006 | 856.3219 | 0.0578 | 0.0120 | 861.3265 |
| Strip Mall | 2.76307e+006 | 538.9226 | 0.0364 | 7.5200e-003 | 542.0722 |
| **Total** | | **10,005.2491** | **0.6748** | **0.1396** | **10,063.7216** |

### Mitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 2.22427e+007 | 4,338.3286 | 0.2926 | 0.0605 | 4,363.6826 |
| General Office Building | 2.1314e+007 | 4,157.1742 | 0.2804 | 0.0580 | 4,181.4695 |
| Hotel | 4.39039e+006 | 856.3219 | 0.0578 | 0.0120 | 861.3265 |

| | | | | | |
|---|---|---|---|---|---|
| Strip Mall | 2.76307e+006 | 538.9226 | 0.0364 | 7.5200e-003 | 542.0722 |
| **Total** | | **9,890.7474** | **0.6671** | **0.1380** | **9,948.5507** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use only Natural Gas Hearths

No Hearths Installed

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 35.8196 | 0.4930 | 41.8484 | 2.1700e-003 | | 0.2240 | 0.2240 | | 0.2240 | 0.2240 | 0.0000 | 67.1053 | 67.1053 | 0.0699 | 0.0000 | 68.8514 |
| Unmitigated | 35.8419 | 0.6838 | 41.9296 | 3.3900e-003 | | 0.2395 | 0.2395 | | 0.2395 | 0.2395 | 0.0000 | 288.0709 | 288.0709 | 0.0741 | 4.0500e-003 | 291.1301 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 4.9516 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 29.5279 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hearth | 0.0223 | 0.1908 | 0.0812 | 1.2200e-003 | | 0.0154 | 0.0154 | | 0.0154 | 0.0154 | 0.0000 | 220.9656 | 220.9656 | 4.2400e-003 | 4.0500e-003 | 222.2786 |
| Landscaping | 1.3400 | 0.4930 | 41.8484 | 2.1700e-003 | | 0.2240 | 0.2240 | | 0.2240 | 0.2240 | 0.0000 | 67.1053 | 67.1053 | 0.0699 | 0.0000 | 68.8514 |
| **Total** | **35.8419** | **0.6838** | **41.9296** | **3.3900e-003** | | **0.2395** | **0.2395** | | **0.2395** | **0.2395** | **0.0000** | **288.0709** | **288.0709** | **0.0741** | **4.0500e-003** | **291.1301** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 4.9516 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 29.5279 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 1.3400 | 0.4930 | 41.8484 | 2.1700e-003 | | 0.2240 | 0.2240 | | 0.2240 | 0.2240 | 0.0000 | 67.1053 | 67.1053 | 0.0699 | 0.0000 | 68.8514 |
| **Total** | **35.8196** | **0.4930** | **41.8484** | **2.1700e-003** | | **0.2240** | **0.2240** | | **0.2240** | **0.2240** | **0.0000** | **67.1053** | **67.1053** | **0.0699** | **0.0000** | **68.8514** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 1,101.1237 | 0.7930 | 0.4756 | 1,262.6763 |

| | | | | |
|---|---|---|---|---|
| Unmitigated | 1,101.1237 | 0.7930 | 0.4756 | 1,262.6763 |

## 7.2 Water by Land Use

### Unmitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 360.302 / 227.147 | 662.7963 | 0.4749 | 0.2847 | 759.5045 |
| General Office Building | 212.507 / 130.246 | 388.3765 | 0.2799 | 0.1679 | 445.4005 |
| Hotel | 10.0706 / 1.11896 | 14.9553 | 0.0130 | 7.9100e-003 | 17.6374 |
| Strip Mall | 19.1485 / 11.7362 | 34.9956 | 0.0252 | 0.0151 | 40.1339 |
| **Total** | | **1,101.1237** | **0.7930** | **0.4756** | **1,262.6763** |

### Mitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 360.302 / 227.147 | 662.7963 | 0.4749 | 0.2847 | 759.5045 |
| General Office Building | 212.507 / 130.246 | 388.3765 | 0.2799 | 0.1679 | 445.4005 |
| Hotel | 10.0706 / 1.11896 | 14.9553 | 0.0130 | 7.9100e-003 | 17.6374 |
| Strip Mall | 19.1485 / 11.7362 | 34.9956 | 0.0252 | 0.0151 | 40.1339 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **1,101.1237** | **0.7930** | **0.4756** | **1,262.6763** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 673.0450 | 39.7758 | 0.0000 | 1,667.4404 |
| Unmitigated | 841.3062 | 49.7198 | 0.0000 | 2,084.3005 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 2543.8 | 516.3684 | 30.5165 | 0.0000 | 1,279.2809 |
| General Office Building | 1111.95 | 225.7158 | 13.3394 | 0.0000 | 559.2013 |
| Hotel | 217.36 | 44.1221 | 2.6075 | 0.0000 | 109.3107 |
| Strip Mall | 271.44 | 55.0999 | 3.2563 | 0.0000 | 136.5076 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **841.3062** | **49.7198** | **0.0000** | **2,084.3005** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 2035.04 | 413.0947 | 24.4132 | 0.0000 | 1,023.4247 |
| General Office Building | 889.56 | 180.5726 | 10.6715 | 0.0000 | 447.3611 |
| Hotel | 173.888 | 35.2977 | 2.0860 | 0.0000 | 87.4485 |
| Strip Mall | 217.152 | 44.0799 | 2.6051 | 0.0000 | 109.2061 |
| **Total** | | **673.0450** | **39.7758** | **0.0000** | **1,667.4404** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

San Jose Downtown Strategy - 2040 GP - Santa Clara County, Annual

# San Jose Downtown Strategy - 2040 GP

**Santa Clara County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 12,395.65 | 1000sqft | 284.56 | 12,395,649.00 | 0 |
| Hotel | 3,997.00 | Room | 133.23 | 5,803,644.00 | 0 |
| Apartments High Rise | 15,980.00 | Dwelling Unit | 257.74 | 15,980,000.00 | 45703 |
| Strip Mall | 1,625.51 | 1000sqft | 37.32 | 1,625,512.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2040 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 290 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E rate

Land Use - Based on PD Table 2.0-1 (Current General Plan)

Construction Phase - no construction

Off-road Equipment - no construction

Vehicle Trips -

Woodstoves - No wood burning

Water And Wastewater - all WTP treatment

Area Mitigation -

Energy Mitigation - New building code requirements

Water Mitigation - Water conservation

Waste Mitigation - Redcue waste by 20 percent

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 480.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 3/30/2020 | 5/29/2018 |
| tblFireplaces | NumberGas | 2,397.00 | 5,114.00 |
| tblFireplaces | NumberWood | 2,716.60 | 0.00 |
| tblLandUse | LandUseSquareFeet | 12,395,600.00 | 12,395,649.00 |
| tblLandUse | LandUseSquareFeet | 1,625,510.00 | 1,625,512.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 290 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 18.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |

## 2.0 Emissions Summary

### 2.2 Overall Operational

#### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 165.0348 | 1.9163 | 118.5312 | 9.8000e-003 | | 0.7032 | 0.7032 | | 0.7032 | 0.7032 | 0.0000 | 832.5682 | 832.5682 | 0.1976 | 0.0117 | 840.9949 |
| Energy | 3.2460 | 29.1031 | 21.8100 | 0.1771 | | 2.2427 | 2.2427 | | 2.2427 | 2.2427 | 0.0000 | 77,977.9432 | 77,977.9432 | 5.2011 | 1.5376 | 78,566.1873 |
| Mobile | 27.8734 | 152.6599 | 325.3601 | 1.6764 | 210.3463 | 0.7260 | 211.0722 | 56.2918 | 0.6753 | 56.9671 | 0.0000 | 154,817.5157 | 154,817.5157 | 4.1911 | 0.0000 | 154,922.2922 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 4,622.8878 | 0.0000 | 4,622.8878 | 273.2048 | 0.0000 | 11,453.0088 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,226.3026 | 3,430.0880 | 4,656.3905 | 4.5638 | 2.7378 | 5,586.3427 |
| **Total** | **196.1542** | **183.6794** | **465.7013** | **1.8632** | **210.3463** | **3.6718** | **214.0181** | **56.2918** | **3.6212** | **59.9130** | **5,849.1903** | **237,058.1151** | **242,907.3054** | **287.3583** | **4.2871** | **251,368.8259** |

#### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 164.9703 | 1.3650 | 118.2966 | 6.2800e-003 | | 0.6586 | 0.6586 | | 0.6586 | 0.6586 | 0.0000 | 194.1401 | 194.1401 | 0.1853 | 0.0000 | 198.7729 |
| Energy | 2.3996 | 21.4855 | 15.9133 | 0.1309 | | 1.6579 | 1.6579 | | 1.6579 | 1.6579 | 0.0000 | 65,532.6507 | 65,532.6507 | 4.6337 | 1.2999 | 66,035.8604 |
| Mobile | 27.8734 | 152.6599 | 325.3601 | 1.6764 | 210.3463 | 0.7260 | 211.0722 | 56.2918 | 0.6753 | 56.9671 | 0.0000 | 154,817.5157 | 154,817.5157 | 4.1911 | 0.0000 | 154,922.2922 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3,698.3102 | 0.0000 | 3,698.3102 | 218.5639 | 0.0000 | 9,162.4070 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 981.0420 | 2,551.4642 | 3,532.5062 | 3.6318 | 2.1862 | 4,274.7989 |
| **Total** | **195.2433** | **175.5104** | **459.5700** | **1.8135** | **210.3463** | **3.0424** | **213.3887** | **56.2918** | **2.9918** | **59.2836** | **4,679.3523** | **223,095.7706** | **227,775.1228** | **231.2057** | **3.4861** | **234,594.1315** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.46** | **4.45** | **1.32** | **2.67** | **0.00** | **17.14** | **0.29** | **0.00** | **17.38** | **1.05** | **20.00** | **5.89** | **6.23** | **19.54** | **18.68** | **6.67** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 27.8734 | 152.6599 | 325.3601 | 1.6764 | 210.3463 | 0.7260 | 211.0722 | 56.2918 | 0.6753 | 56.9671 | 0.0000 | 154,817.5157 | 154,817.5157 | 4.1911 | 0.0000 | 154,922.2922 |
| Unmitigated | 27.8734 | 152.6599 | 325.3601 | 1.6764 | 210.3463 | 0.7260 | 211.0722 | 56.2918 | 0.6753 | 56.9671 | 0.0000 | 154,817.5157 | 154,817.5157 | 4.1911 | 0.0000 | 154,922.2922 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments High Rise | 67,116.00 | 79,580.40 | 58327.00 | 156,224,279 | 156,224,279 |
| General Office Building | 136,724.01 | 30,493.30 | 13015.43 | 248,236,861 | 248,236,861 |
| Hotel | 32,655.49 | 32,735.43 | 23782.15 | 59,656,477 | 59,656,477 |
| Strip Mall | 72,042.69 | 68,336.52 | 33209.21 | 101,589,202 | 101,589,202 |
| Total | 308,538.19 | 211,145.65 | 128,333.79 | 565,706,820 | 565,706,820 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments High Rise | 10.80 | 4.80 | 5.70 | 31.00 | 15.00 | 54.00 | 86 | 11 | 3 |
| General Office Building | 9.50 | 7.30 | 7.30 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| Hotel | 9.50 | 7.30 | 7.30 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Strip Mall | 9.50 | 7.30 | 7.30 | 16.60 | 64.40 | 19.00 | 45 | 40 | 15 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments High Rise | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| General Office Building | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| Hotel | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| Strip Mall | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 41,785.2563 | 41,785.2563 | 4.1785 | 0.8645 | 42,147.3472 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 45,853.6183 | 45,853.6183 | 4.5854 | 0.9487 | 46,250.9636 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 2.3996 | 21.4855 | 15.9133 | 0.1309 | | 1.6579 | 1.6579 | | 1.6579 | 1.6579 | 0.0000 | 23,747.3944 | 23,747.3944 | 0.4552 | 0.4354 | 23,888.5133 |
| NaturalGas Unmitigated | 3.2460 | 29.1031 | 21.8100 | 0.1771 | | 2.2427 | 2.2427 | | 2.2427 | 2.2427 | 0.0000 | 32,124.3249 | 32,124.3249 | 0.6157 | 0.5890 | 32,315.2237 |

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 1.38058e+008 | 0.7444 | 6.3615 | 2.7070 | 0.0406 | | 0.5143 | 0.5143 | | 0.5143 | 0.5143 | 0.0000 | 7,367.3226 | 7,367.3226 | 0.1412 | 0.1351 | 7,411.1029 |
| General Office Building | 2.02917e+008 | 1.0942 | 9.9469 | 8.3554 | 0.0597 | | 0.7560 | 0.7560 | | 0.7560 | 0.7560 | 0.0000 | 10,828.4118 | 10,828.4118 | 0.2075 | 0.1985 | 10,892.7597 |
| Hotel | 2.57159e+008 | 1.3866 | 12.6059 | 10.5889 | 0.0756 | | 0.9581 | 0.9581 | | 0.9581 | 0.9581 | 0.0000 | 13,723.0084 | 13,723.0084 | 0.2630 | 0.2516 | 13,804.5574 |
| Strip Mall | 3.85246e+006 | 0.0208 | 0.1889 | 0.1586 | 1.1300e-003 | | 0.0144 | 0.0144 | | 0.0144 | 0.0144 | 0.0000 | 205.5821 | 205.5821 | 3.9400e-003 | 3.7700e-003 | 206.8038 |
| **Total** | | **3.2460** | **29.1031** | **21.8100** | **0.1771** | | **2.2427** | **2.2427** | | **2.2427** | **2.2427** | **0.0000** | **32,124.3249** | **32,124.3249** | **0.6157** | **0.5890** | **32,315.2237** |

### Mitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 1.11766e+008 | 0.6027 | 5.1500 | 2.1915 | 0.0329 | | 0.4164 | 0.4164 | | 0.4164 | 0.4164 | 0.0000 | 5,964.2571 | 5,964.2571 | 0.1143 | 0.1093 | 5,999.6997 |
| General Office Building | 1.42265e+008 | 0.7671 | 6.9738 | 5.8580 | 0.0418 | | 0.5300 | 0.5300 | | 0.5300 | 0.5300 | 0.0000 | 7,591.7949 | 7,591.7949 | 0.1455 | 0.1392 | 7,636.9091 |
| Hotel | 1.88282e+008 | 1.0153 | 9.2295 | 7.7528 | 0.0554 | | 0.7014 | 0.7014 | | 0.7014 | 0.7014 | 0.0000 | 10,047.4349 | 10,047.4349 | 0.1926 | 0.1842 | 10,107.1418 |
| Strip Mall | 2.69672e+006 | 0.0145 | 0.1322 | 0.1110 | 7.9000e-004 | | 0.0101 | 0.0101 | | 0.0101 | 0.0101 | 0.0000 | 143.9075 | 143.9075 | 2.7600e-003 | 2.6400e-003 | 144.7627 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | | **2.3996** | **21.4855** | **15.9133** | **0.1309** | | **1.6579** | **1.6579** | | **1.6579** | **1.6579** | **0.0000** | **23,747.3944** | **23,747.3944** | **0.4552** | **0.4354** | **23,888.5133** |

## 5.3 Energy by Land Use - Electricity

### Unmitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 6.5971e+007 | 8,677.9476 | 0.8678 | 0.1795 | 8,753.1465 |
| General Office Building | 2.21014e+008 | 29,072.6321 | 2.9073 | 0.6015 | 29,324.5614 |
| Hotel | 4.42238e+007 | 5,817.2734 | 0.5817 | 0.1204 | 5,867.6831 |
| Strip Mall | 1.73767e+007 | 2,285.7652 | 0.2286 | 0.0473 | 2,305.5726 |
| **Total** | | **45,853.6183** | **4.5854** | **0.9487** | **46,250.9636** |

### Mitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 6.26791e+007 | 8,244.9257 | 0.8245 | 0.1706 | 8,316.3723 |
| General Office Building | 1.98293e+008 | 26,083.8416 | 2.6084 | 0.5397 | 26,309.8715 |
| Hotel | 4.06545e+007 | 5,347.7690 | 0.5348 | 0.1106 | 5,394.1102 |
| Strip Mall | 1.60308e+007 | 2,108.7200 | 0.2109 | 0.0436 | 2,126.9932 |
| **Total** | | **41,785.2563** | **4.1785** | **0.8645** | **42,147.3472** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use only Natural Gas Hearths

No Hearths Installed

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 164.9703 | 1.3650 | 118.2966 | 6.2800e-003 | | 0.6586 | 0.6586 | | 0.6586 | 0.6586 | 0.0000 | 194.1401 | 194.1401 | 0.1853 | 0.0000 | 198.7729 |
| Unmitigated | 165.0348 | 1.9163 | 118.5312 | 9.8000e-003 | | 0.7032 | 0.7032 | | 0.7032 | 0.7032 | 0.0000 | 832.5682 | 832.5682 | 0.1976 | 0.0117 | 840.9949 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 21.5863 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 139.8357 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0645 | 0.5513 | 0.2346 | 3.5200e-003 | | 0.0446 | 0.0446 | | 0.0446 | 0.0446 | 0.0000 | 638.4281 | 638.4281 | 0.0122 | 0.0117 | 642.2220 |
| Landscaping | 3.5483 | 1.3650 | 118.2966 | 6.2800e-003 | | 0.6586 | 0.6586 | | 0.6586 | 0.6586 | 0.0000 | 194.1401 | 194.1401 | 0.1853 | 0.0000 | 198.7729 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **165.0348** | **1.9163** | **118.5312** | **9.8000e-003** | | **0.7032** | **0.7032** | | **0.7032** | **0.7032** | **0.0000** | **832.5682** | **832.5682** | **0.1976** | **0.0117** | **840.9949** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 21.5863 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 139.8357 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 3.5483 | 1.3650 | 118.2966 | 6.2800e-003 | | 0.6586 | 0.6586 | | 0.6586 | 0.6586 | 0.0000 | 194.1401 | 194.1401 | 0.1853 | 0.0000 | 198.7729 |
| **Total** | **164.9703** | **1.3650** | **118.2966** | **6.2800e-003** | | **0.6586** | **0.6586** | | **0.6586** | **0.6586** | **0.0000** | **194.1401** | **194.1401** | **0.1853** | **0.0000** | **198.7729** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 3,532.5062 | 3.6318 | 2.1862 | 4,274.7989 |
| Unmitigated | 4,656.3905 | 4.5638 | 2.7378 | 5,586.3427 |

## 7.2 Water by Land Use

### Unmitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 1041.16 / 656.384 | 1,411.6315 | 1.3722 | 0.8227 | 1,691.0884 |
| General Office Building | 2203.12 / 1350.3 | 2,969.2558 | 2.9018 | 1.7404 | 3,560.4375 |
| Hotel | 101.391 / 11.2657 | 113.2263 | 0.1312 | 0.0796 | 140.2304 |
| Strip Mall | 120.406 / 73.797 | 162.2770 | 0.1586 | 0.0951 | 194.5865 |
| **Total** | | **4,656.3905** | **4.5638** | **2.7378** | **5,586.3427** |

### Mitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 832.929 / 393.831 | 1,068.8658 | 1.0917 | 0.6569 | 1,291.9076 |
| General Office Building | 1762.49 / 810.178 | 2,251.0703 | 2.3090 | 1.3897 | 2,722.9382 |
| Hotel | 81.1128 / 6.7594 | 89.5437 | 0.1049 | 0.0637 | 111.1380 |
| Strip Mall | 96.3245 / 44.2782 | 123.0264 | 0.1262 | 0.0760 | 148.8151 |
| **Total** | | **3,532.5062** | **3.6318** | **2.1862** | **4,274.7989** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 3,698.3102 | 218.5639 | 0.0000 | 9,162.4070 |
| Unmitigated | 4,622.8878 | 273.2048 | 0.0000 | 11,453.0088 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 7350.8 | 1,492.1460 | 88.1833 | 0.0000 | 3,696.7285 |
| General Office Building | 11527.9 | 2,340.0616 | 138.2937 | 0.0000 | 5,797.4034 |
| Hotel | 2188.36 | 444.2173 | 26.2525 | 0.0000 | 1,100.5296 |
| Strip Mall | 1706.79 | 346.4630 | 20.4754 | 0.0000 | 858.3473 |
| **Total** | | **4,622.8878** | **273.2048** | **0.0000** | **11,453.0088** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 5880.64 | 1,193.7168 | 70.5466 | 0.0000 | 2,957.3828 |
| General Office Building | 9222.33 | 1,872.0492 | 110.6349 | 0.0000 | 4,637.9228 |
| Hotel | 1750.69 | 355.3738 | 21.0020 | 0.0000 | 880.4237 |
| Strip Mall | 1365.43 | 277.1704 | 16.3803 | 0.0000 | 686.6778 |
| **Total** | | **3,698.3102** | **218.5639** | **0.0000** | **9,162.4070** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

San Jose Downtown Strategy - 2040 Amended GP - Santa Clara County, Annual

# San Jose Downtown Strategy - 2040 Amended GP

**Santa Clara County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 15,395.65 | 1000sqft | 353.44 | 15,395,649.00 | 0 |
| Hotel | 3,997.00 | Room | 133.23 | 5,803,644.00 | 0 |
| Apartments High Rise | 19,890.00 | Dwelling Unit | 320.81 | 19,890,000.00 | 56885 |
| Strip Mall | 1,658.51 | 1000sqft | 38.07 | 1,658,512.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2040 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 290 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E rate

Land Use - Based on PD Table 2.0-1 (Proposed Downtown Strategy 2040)

Construction Phase - no construction

Off-road Equipment - no construction

Vehicle Trips -

Woodstoves - No wood burning

Energy Use -

Water And Wastewater - all WTP treatment

Area Mitigation -

Energy Mitigation - New building code requirements

Water Mitigation - Water conservation

Waste Mitigation - Redcue waste by 20 percent

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 540.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 6/22/2020 | 5/29/2018 |
| tblFireplaces | FireplaceWoodMass | 228.80 | 0.00 |
| tblFireplaces | NumberGas | 2,983.50 | 6,365.00 |
| tblFireplaces | NumberWood | 3,381.30 | 0.00 |
| tblLandUse | LandUseSquareFeet | 15,395,600.00 | 15,395,649.00 |
| tblLandUse | LandUseSquareFeet | 1,658,510.00 | 1,658,512.00 |
| tblLandUse | LotAcreage | 353.43 | 353.44 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 290 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 18.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |

## 2.0 Emissions Summary

### 2.2 Overall Operational

#### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 197.3674 | 2.3850 | 147.5209 | 0.0122 | | 0.8752 | 0.8752 | | 0.8752 | 0.8752 | 0.0000 | 1,036.2200 | 1,036.2200 | 0.2458 | 0.0146 | 1,046.7067 |
| Energy | 3.6934 | 33.0709 | 24.4977 | 0.2015 | | 2.5518 | 2.5518 | | 2.5518 | 2.5518 | 0.0000 | 91,611.3580 | 91,611.3580 | 6.2065 | 1.8093 | 92,305.6865 |
| Mobile | 32.5329 | 177.9709 | 381.7443 | 1.9712 | 247.6652 | 0.8527 | 248.5179 | 66.2789 | 0.7932 | 67.0721 | 0.0000 | 182,038.0275 | 182,038.0275 | 4.9168 | 0.0000 | 182,160.9475 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 5,561.3657 | 0.0000 | 5,561.3657 | 328.6673 | 0.0000 | 13,778.0482 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,505.9466 | 4,217.7609 | 5,723.7075 | 5.6051 | 3.3622 | 6,865.7720 |
| **Total** | **233.5938** | **213.4267** | **553.7629** | **2.1848** | **247.6652** | **4.2796** | **251.9449** | **66.2789** | **4.2202** | **70.4991** | **7,067.3123** | **278,903.3664** | **285,970.6787** | **345.6415** | **5.1861** | **296,157.1609** |

#### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 197.2872 | 1.6989 | 147.2290 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6179 | 241.6179 | 0.2306 | 0.0000 | 247.3827 |
| Energy | 2.7330 | 24.4361 | 17.8695 | 0.1491 | | 1.8882 | 1.8882 | | 1.8882 | 1.8882 | 0.0000 | 77,205.2881 | 77,205.2881 | 5.5342 | 1.5336 | 77,800.6623 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 32.5329 | 177.9709 | 381.7443 | 1.9712 | 247.6652 | 0.8527 | 248.5179 | 66.2789 | 0.7932 | 67.0721 | 0.0000 | 182,038.0275 | 182,038.0275 | 4.9168 | 0.0000 | 182,160.9475 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 4,449.0926 | 0.0000 | 4,449.0926 | 262.9338 | 0.0000 | 11,022.4386 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,204.7572 | 3,136.5846 | 4,341.3419 | 4.4603 | 2.6849 | 5,252.9343 |
| **Total** | **232.5531** | **204.1058** | **546.8427** | **2.1280** | **247.6652** | **3.5606** | **251.2258** | **66.2789** | **3.5012** | **69.7800** | **5,653.8498** | **262,621.5181** | **268,275.3680** | **278.0758** | **4.2185** | **276,484.3654** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.45** | **4.37** | **1.25** | **2.60** | **0.00** | **16.80** | **0.29** | **0.00** | **17.04** | **1.02** | **20.00** | **5.84** | **6.19** | **19.55** | **18.66** | **6.64** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 32.5329 | 177.9709 | 381.7443 | 1.9712 | 247.6652 | 0.8527 | 248.5179 | 66.2789 | 0.7932 | 67.0721 | 0.0000 | 182,038.0275 | 182,038.0275 | 4.9168 | 0.0000 | 182,160.9475 |
| Unmitigated | 32.5329 | 177.9709 | 381.7443 | 1.9712 | 247.6652 | 0.8527 | 248.5179 | 66.2789 | 0.7932 | 67.0721 | 0.0000 | 182,038.0275 | 182,038.0275 | 4.9168 | 0.0000 | 182,160.9475 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments High Rise | 83,538.00 | 99,052.20 | 72598.50 | 194,449,369 | 194,449,369 |
| General Office Building | 169,814.01 | 37,873.30 | 16165.43 | 308,315,247 | 308,315,247 |

| | | | | | |
|---|---|---|---|---|---|
| Hotel | 32,655.49 | 32,735.43 | 23782.15 | 59,656,477 | 59,656,477 |
| Strip Mall | 73,505.25 | 69,723.84 | 33883.40 | 103,651,595 | 103,651,595 |
| Total | 359,512.75 | 239,384.77 | 146,429.48 | 666,072,688 | 666,072,688 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments High Rise | 10.80 | 4.80 | 5.70 | 31.00 | 15.00 | 54.00 | 86 | 11 | 3 |
| General Office Building | 9.50 | 7.30 | 7.30 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| Hotel | 9.50 | 7.30 | 7.30 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Strip Mall | 9.50 | 7.30 | 7.30 | 16.60 | 64.40 | 19.00 | 45 | 40 | 15 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments High Rise | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| General Office Building | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| Hotel | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| Strip Mall | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 50,158.2634 | 50,158.2634 | 5.0158 | 1.0378 | 50,592.9107 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 55,059.5201 | 55,059.5201 | 5.5060 | 1.1392 | 55,536.6393 |
| NaturalGas Mitigated | 2.7330 | 24.4361 | 17.8695 | 0.1491 | | 1.8882 | 1.8882 | | 1.8882 | 1.8882 | 0.0000 | 27,047.0247 | 27,047.0247 | 0.5184 | 0.4959 | 27,207.7516 |
| NaturalGas Unmitigated | 3.6934 | 33.0709 | 24.4977 | 0.2015 | | 2.5518 | 2.5518 | | 2.5518 | 2.5518 | 0.0000 | 36,551.8379 | 36,551.8379 | 0.7006 | 0.6701 | 36,769.0472 |

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 1.71839e+008 | 0.9266 | 7.9181 | 3.3694 | 0.0505 | | 0.6402 | 0.6402 | | 0.6402 | 0.6402 | 0.0000 | 9,169.9653 | 9,169.9653 | 0.1758 | 0.1681 | 9,224.4579 |
| General Office Building | 2.52027e+008 | 1.3590 | 12.3543 | 10.3776 | 0.0741 | | 0.9389 | 0.9389 | | 0.9389 | 0.9389 | 0.0000 | 13,449.1084 | 13,449.1084 | 0.2578 | 0.2466 | 13,529.0298 |
| Hotel | 2.57159e+008 | 1.3866 | 12.6059 | 10.5889 | 0.0756 | | 0.9581 | 0.9581 | | 0.9581 | 0.9581 | 0.0000 | 13,723.0084 | 13,723.0084 | 0.2630 | 0.2516 | 13,804.5574 |
| Strip Mall | 3.93067e+006 | 0.0212 | 0.1927 | 0.1619 | 1.1600e-003 | | 0.0146 | 0.0146 | | 0.0146 | 0.0146 | 0.0000 | 209.7557 | 209.7557 | 4.0200e-003 | 3.8500e-003 | 211.0022 |
| **Total** | | **3.6934** | **33.0709** | **24.4977** | **0.2015** | | **2.5518** | **2.5518** | | **2.5518** | **2.5518** | **0.0000** | **36,551.8379** | **36,551.8379** | **0.7006** | **0.6701** | **36,769.0472** |

### Mitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 1.39113e+008 | 0.7501 | 6.4101 | 2.7277 | 0.0409 | | 0.5183 | 0.5183 | | 0.5183 | 0.5183 | 0.0000 | 7,423.5967 | 7,423.5967 | 0.1423 | 0.1361 | 7,467.7114 |
| General Office Building | 1.76696e+008 | 0.9528 | 8.6616 | 7.2757 | 0.0520 | | 0.6583 | 0.6583 | | 0.6583 | 0.6583 | 0.0000 | 9,429.1642 | 9,429.1642 | 0.1807 | 0.1729 | 9,485.1970 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hotel | 1.88282e+008 | 1.0153 | 9.2295 | 7.7528 | 0.0554 | | 0.7014 | 0.7014 | | 0.7014 | 0.7014 | 0.0000 | 10,047.4349 | 10,047.4349 | 0.1926 | 0.1842 | 10,107.1418 |
| Strip Mall | 2.75147e+006 | 0.0148 | 0.1349 | 0.1133 | 8.1000e-004 | | 0.0103 | 0.0103 | | 0.0103 | 0.0103 | 0.0000 | 146.8290 | 146.8290 | 2.8100e-003 | 2.6900e-003 | 147.7015 |
| **Total** | | **2.7330** | **24.4361** | **17.8695** | **0.1491** | | **1.8882** | **1.8882** | | **1.8882** | **1.8882** | **0.0000** | **27,047.0247** | **27,047.0247** | **0.5184** | **0.4959** | **27,207.7516** |

## 5.3 Energy by Land Use - Electricity

### Unmitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 8.21129e+007 | 10,801.2752 | 1.0801 | 0.2235 | 10,894.8738 |
| General Office Building | 2.74504e+008 | 36,108.8023 | 3.6109 | 0.7471 | 36,421.7037 |
| Hotel | 4.42238e+007 | 5,817.2734 | 0.5817 | 0.1204 | 5,867.6831 |
| Strip Mall | 1.77295e+007 | 2,332.1692 | 0.2332 | 0.0483 | 2,352.3787 |
| **Total** | | **55,059.5201** | **5.5060** | **1.1392** | **55,536.6393** |

### Mitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 7.80155e+007 | 10,262.3012 | 1.0262 | 0.2123 | 10,351.2293 |
| General Office Building | 2.46284e+008 | 32,396.6635 | 3.2397 | 0.6703 | 32,677.3973 |
| Hotel | 4.06545e+007 | 5,347.7690 | 0.5348 | 0.1106 | 5,394.1102 |

| | | | | | |
|---|---|---|---|---|---|
| Strip Mall | 1.63562e+007 | 2,151.5298 | 0.2152 | 0.0445 | 2,170.1739 |
| **Total** | | **50,158.2634** | **5.0158** | **1.0378** | **50,592.9107** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

Use only Natural Gas Hearths

No Hearths Installed

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 197.2872 | 1.6989 | 147.2290 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6179 | 241.6179 | 0.2306 | 0.0000 | 247.3827 |
| Unmitigated | 197.3674 | 2.3850 | 147.5209 | 0.0122 | | 0.8752 | 0.8752 | | 0.8752 | 0.8752 | 0.0000 | 1,036.2200 | 1,036.2200 | 0.2458 | 0.0146 | 1,046.7067 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 25.9203 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 166.9516 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hearth | 0.0803 | 0.6861 | 0.2920 | 4.3800e-003 | | 0.0555 | 0.0555 | | 0.0555 | 0.0555 | 0.0000 | 794.6021 | 794.6021 | 0.0152 | 0.0146 | 799.3240 |
| Landscaping | 4.4153 | 1.6989 | 147.2290 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6179 | 241.6179 | 0.2306 | 0.0000 | 247.3827 |
| **Total** | **197.3674** | **2.3850** | **147.5209** | **0.0122** | | **0.8752** | **0.8752** | | **0.8752** | **0.8752** | **0.0000** | **1,036.2200** | **1,036.2200** | **0.2458** | **0.0146** | **1,046.7067** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 25.9203 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 166.9516 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 4.4153 | 1.6989 | 147.2290 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6179 | 241.6179 | 0.2306 | 0.0000 | 247.3827 |
| **Total** | **197.2872** | **1.6989** | **147.2290** | **7.8100e-003** | | **0.8197** | **0.8197** | | **0.8197** | **0.8197** | **0.0000** | **241.6179** | **241.6179** | **0.2306** | **0.0000** | **247.3827** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |

| | | | | |
|---|---|---|---|---|
| Mitigated | 4,341.3419 | 4.4603 | 2.6849 | 5,252.9343 |
| Unmitigated | 5,723.7075 | 5.6051 | 3.3622 | 6,865.7720 |

## 7.2 Water by Land Use

### Unmitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 1295.91 / 816.989 | 1,757.0307 | 1.7080 | 1.0240 | 2,104.8653 |
| General Office Building | 2736.32 / 1677.1 | 3,687.8791 | 3.6041 | 2.1616 | 4,422.1394 |
| Hotel | 101.391 / 11.2657 | 113.2263 | 0.1312 | 0.0796 | 140.2304 |
| Strip Mall | 122.85 / 75.2952 | 165.5714 | 0.1618 | 0.0971 | 198.5369 |
| **Total** | | **5,723.7075** | **5.6051** | **3.3622** | **6,865.7720** |

### Mitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 1036.73 / 490.193 | 1,330.3968 | 1.3588 | 0.8176 | 1,608.0126 |
| General Office Building | 2189.05 / 1006.26 | 2,795.8774 | 2.8679 | 1.7261 | 3,381.9474 |
| Hotel | 81.1128 / 6.7594 | 89.5437 | 0.1049 | 0.0637 | 111.1380 |

| | | | | | |
|---|---|---|---|---|---|
| Strip Mall | 98.28 / 45.1771 | 125.5240 | 0.1288 | 0.0775 | 151.8363 |
| **Total** | | **4,341.3419** | **4.4603** | **2.6849** | **5,252.9343** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 4,449.0926 | 262.9338 | 0.0000 | 11,022.4386 |
| Unmitigated | 5,561.3657 | 328.6673 | 0.0000 | 13,778.0482 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 9149.4 | 1,857.2455 | 109.7601 | 0.0000 | 4,601.2472 |
| General Office Building | 14317.9 | 2,906.4063 | 171.7637 | 0.0000 | 7,200.4987 |
| Hotel | 2188.36 | 444.2173 | 26.2525 | 0.0000 | 1,100.5296 |

| | | | | | |
|---|---|---|---|---|---|
| Strip Mall | 1741.44 | 353.4966 | 20.8911 | 0.0000 | 875.7728 |
| **Total** | | **5,561.3657** | **328.6673** | **0.0000** | **13,778.0482** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 7319.52 | 1,485.7964 | 87.8081 | 0.0000 | 3,680.9977 |
| General Office Building | 11454.3 | 2,325.1251 | 137.4110 | 0.0000 | 5,760.3990 |
| Hotel | 1750.69 | 355.3738 | 21.0020 | 0.0000 | 880.4237 |
| Strip Mall | 1393.15 | 282.7973 | 16.7128 | 0.0000 | 700.6183 |
| **Total** | | **4,449.0926** | **262.9338** | **0.0000** | **11,022.4386** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

San Jose Downtown Strategy - 2040 Amended GP Alt 2 - Santa Clara County, Annual

# San Jose Downtown Strategy - 2040 Amended GP Alt 2

**Santa Clara County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 16,595.65 | 1000sqft | 380.98 | 16,595,649.00 | 0 |
| Hotel | 3,997.00 | Room | 133.23 | 5,803,644.00 | 0 |
| Apartments High Rise | 19,890.00 | Dwelling Unit | 320.81 | 19,890,000.00 | 56885 |
| Strip Mall | 1,658.51 | 1000sqft | 38.07 | 1,658,512.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2040 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 290 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E rate

Land Use - Based on PD Table 2.0-1 (Proposed Downtown Strategy 2040)

Construction Phase - no construction

Off-road Equipment - no construction

Vehicle Trips -

Woodstoves - No wood burning

Energy Use -

Water And Wastewater - all WTP treatment

Area Mitigation -

Energy Mitigation - New building code requirements

Water Mitigation - Water conservation

Waste Mitigation - Redcue waste by 20 percent

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 540.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 6/22/2020 | 5/29/2018 |
| tblFireplaces | FireplaceWoodMass | 228.80 | 0.00 |
| tblFireplaces | NumberGas | 2,983.50 | 6,365.00 |
| tblFireplaces | NumberWood | 3,381.30 | 0.00 |
| tblLandUse | LandUseSquareFeet | 16,595,600.00 | 16,595,649.00 |
| tblLandUse | LandUseSquareFeet | 1,658,510.00 | 1,658,512.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 290 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 18.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |

| | | | |
|---|---|---|---|
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |

## 2.0 Emissions Summary

### 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 202.6808 | 2.3851 | 147.5319 | 0.0122 | | 0.8752 | 0.8752 | | 0.8752 | 0.8752 | 0.0000 | 1,036.2414 | 1,036.2414 | 0.2459 | 0.0146 | 1,046.7295 |
| Energy | 3.7993 | 34.0338 | 25.3066 | 0.2072 | | 2.6250 | 2.6250 | | 2.6250 | 2.6250 | 0.0000 | 95,474.1047 | 95,474.1047 | 6.5081 | 1.8867 | 96,199.0514 |
| Mobile | 33.6335 | 183.9376 | 395.1740 | 2.0416 | 256.6008 | 0.8829 | 257.4837 | 68.6702 | 0.8214 | 69.4915 | 0.0000 | 188,542.6076 | 188,542.6076 | 5.0896 | 0.0000 | 188,669.8482 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 5,787.9037 | 0.0000 | 5,787.9037 | 342.0553 | 0.0000 | 14,339.2863 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,581.4055 | 4,429.7513 | 6,011.1568 | 5.8860 | 3.5307 | 7,210.4527 |
| **Total** | **240.1136** | **220.3565** | **568.0125** | **2.2610** | **256.6008** | **4.3831** | **260.9839** | **68.6702** | **4.3215** | **72.9917** | **7,369.3092** | **289,482.7050** | **296,852.0141** | **359.7849** | **5.4320** | **307,465.3682** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 202.6005 | 1.6990 | 147.2399 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6393 | 241.6393 | 0.2307 | 0.0000 | 247.4055 |
| Energy | 2.8072 | 25.1112 | 18.4366 | 0.1531 | | 1.9395 | 1.9395 | | 1.9395 | 1.9395 | 0.0000 | 80,465.3646 | 80,465.3646 | 5.8008 | 1.5993 | 81,086.9878 |
| Mobile | 33.6335 | 183.9376 | 395.1740 | 2.0416 | 256.6008 | 0.8829 | 257.4837 | 68.6702 | 0.8214 | 69.4915 | 0.0000 | 188,542.6076 | 188,542.6076 | 5.0896 | 0.0000 | 188,669.8482 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 4,630.3229 | 0.0000 | 4,630.3229 | 273.6443 | 0.0000 | 11,471.4291 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,265.1244 | 3,294.1403 | 4,559.2647 | 4.6838 | 2.8194 | 5,516.5380 |
| **Total** | **239.0412** | **210.7477** | **560.8505** | **2.2025** | **256.6008** | **3.6422** | **260.2430** | **68.6702** | **3.5806** | **72.2508** | **5,895.4473** | **272,543.7517** | **278,439.1991** | **289.4492** | **4.4187** | **286,992.2085** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.45** | **4.36** | **1.26** | **2.59** | **0.00** | **16.90** | **0.28** | **0.00** | **17.14** | **1.02** | **20.00** | **5.85** | **6.20** | **19.55** | **18.65** | **6.66** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 33.6335 | 183.9376 | 395.1740 | 2.0416 | 256.6008 | 0.8829 | 257.4837 | 68.6702 | 0.8214 | 69.4915 | 0.0000 | 188,542.6076 | 188,542.6076 | 5.0896 | 0.0000 | 188,669.8482 |
| Unmitigated | 33.6335 | 183.9376 | 395.1740 | 2.0416 | 256.6008 | 0.8829 | 257.4837 | 68.6702 | 0.8214 | 69.4915 | 0.0000 | 188,542.6076 | 188,542.6076 | 5.0896 | 0.0000 | 188,669.8482 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments High Rise | 83,538.00 | 99,052.20 | 72598.50 | 194,449,369 | 194,449,369 |
| General Office Building | 183,050.01 | 40,825.30 | 17425.43 | 332,346,602 | 332,346,602 |
| Hotel | 32,655.49 | 32,735.43 | 23782.15 | 59,656,477 | 59,656,477 |
| Strip Mall | 73,505.25 | 69,723.84 | 33883.40 | 103,651,595 | 103,651,595 |

| | | | | | |
|---|---|---|---|---|---|
| Total | 372,748.75 | 242,336.77 | 147,689.48 | 690,104,042 | 690,104,042 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments High Rise | 10.80 | 4.80 | 5.70 | 31.00 | 15.00 | 54.00 | 86 | 11 | 3 |
| General Office Building | 9.50 | 7.30 | 7.30 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| Hotel | 9.50 | 7.30 | 7.30 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Strip Mall | 9.50 | 7.30 | 7.30 | 16.60 | 64.40 | 19.00 | 45 | 40 | 15 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments High Rise | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| General Office Building | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| Hotel | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |
| Strip Mall | 0.621663 | 0.033362 | 0.179130 | 0.101130 | 0.011078 | 0.005126 | 0.013709 | 0.024709 | 0.002299 | 0.001422 | 0.005077 | 0.000653 | 0.000642 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 52,683.3922 | 52,683.3922 | 5.2683 | 1.0900 | 53,139.9210 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 57,873.9882 | 57,873.9882 | 5.7874 | 1.1974 | 58,375.4962 |
| NaturalGas Mitigated | 2.8072 | 25.1112 | 18.4366 | 0.1531 | | 1.9395 | 1.9395 | | 1.9395 | 1.9395 | 0.0000 | 27,781.9724 | 27,781.9724 | 0.5325 | 0.5093 | 27,947.0668 |
| NaturalGas Unmitigated | 3.7993 | 34.0338 | 25.3066 | 0.2072 | | 2.6250 | 2.6250 | | 2.6250 | 2.6250 | 0.0000 | 37,600.1165 | 37,600.1165 | 0.7207 | 0.6893 | 37,823.5552 |

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 1.71839e+008 | 0.9266 | 7.9181 | 3.3694 | 0.0505 | | 0.6402 | 0.6402 | | 0.6402 | 0.6402 | 0.0000 | 9,169.9653 | 9,169.9653 | 0.1758 | 0.1681 | 9,224.4579 |
| General Office Building | 2.71671e+008 | 1.4649 | 13.3172 | 11.1864 | 0.0799 | | 1.0121 | 1.0121 | | 1.0121 | 1.0121 | 0.0000 | 14,497.3871 | 14,497.3871 | 0.2779 | 0.2658 | 14,583.5378 |
| Hotel | 2.57159e+008 | 1.3866 | 12.6059 | 10.5889 | 0.0756 | | 0.9581 | 0.9581 | | 0.9581 | 0.9581 | 0.0000 | 13,723.0084 | 13,723.0084 | 0.2630 | 0.2516 | 13,804.5574 |
| Strip Mall | 3.93067e+006 | 0.0212 | 0.1927 | 0.1619 | 1.1600e-003 | | 0.0146 | 0.0146 | | 0.0146 | 0.0146 | 0.0000 | 209.7557 | 209.7557 | 4.0200e-003 | 3.8500e-003 | 211.0022 |
| **Total** | | **3.7993** | **34.0338** | **25.3066** | **0.2072** | | **2.6250** | **2.6250** | | **2.6250** | **2.6250** | **0.0000** | **37,600.1165** | **37,600.1165** | **0.7207** | **0.6894** | **37,823.5552** |

### Mitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 1.39113e+008 | 0.7501 | 6.4101 | 2.7277 | 0.0409 | | 0.5183 | 0.5183 | | 0.5183 | 0.5183 | 0.0000 | 7,423.5967 | 7,423.5967 | 0.1423 | 0.1361 | 7,467.7114 |
| General Office Building | 1.90468e+008 | 1.0270 | 9.3367 | 7.8428 | 0.0560 | | 0.7096 | 0.7096 | | 0.7096 | 0.7096 | 0.0000 | 10,164.1119 | 10,164.1119 | 0.1948 | 0.1863 | 10,224.5121 |
| Hotel | 1.88282e+008 | 1.0153 | 9.2295 | 7.7528 | 0.0554 | | 0.7014 | 0.7014 | | 0.7014 | 0.7014 | 0.0000 | 10,047.4349 | 10,047.4349 | 0.1926 | 0.1842 | 10,107.1418 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Strip Mall | 2.75147e+006 | 0.0148 | 0.1349 | 0.1133 | 8.1000e-004 | | 0.0103 | 0.0103 | | 0.0103 | 0.0103 | 0.0000 | 146.8290 | 146.8290 | 2.8100e-003 | 2.6900e-003 | 147.7015 |
| **Total** | | **2.8072** | **25.1112** | **18.4366** | **0.1531** | | **1.9395** | **1.9395** | | **1.9395** | **1.9395** | **0.0000** | **27,781.9724** | **27,781.9724** | **0.5325** | **0.5093** | **27,947.0668** |

## 5.3 Energy by Land Use - Electricity

### Unmitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 8.21129e+007 | 10,801.2752 | 1.0801 | 0.2235 | 10,894.8738 |
| General Office Building | 2.959e+008 | 38,923.2703 | 3.8923 | 0.8053 | 39,260.5606 |
| Hotel | 4.42238e+007 | 5,817.2734 | 0.5817 | 0.1204 | 5,867.6831 |
| Strip Mall | 1.77295e+007 | 2,332.1692 | 0.2332 | 0.0483 | 2,352.3787 |
| **Total** | | **57,873.9881** | **5.7874** | **1.1974** | **58,375.4962** |

### Mitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 7.80155e+007 | 10,262.3012 | 1.0262 | 0.2123 | 10,351.2293 |
| General Office Building | 2.65481e+008 | 34,921.7922 | 3.4922 | 0.7225 | 35,224.4076 |
| Hotel | 4.06545e+007 | 5,347.7690 | 0.5348 | 0.1106 | 5,394.1102 |
| Strip Mall | 1.63562e+007 | 2,151.5298 | 0.2152 | 0.0445 | 2,170.1739 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **52,683.3922** | **5.2683** | **1.0900** | **53,139.9210** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use only Natural Gas Hearths

No Hearths Installed

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 202.6005 | 1.6990 | 147.2399 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6393 | 241.6393 | 0.2307 | 0.0000 | 247.4055 |
| Unmitigated | 202.6808 | 2.3851 | 147.5319 | 0.0122 | | 0.8752 | 0.8752 | | 0.8752 | 0.8752 | 0.0000 | 1,036.2414 | 1,036.2414 | 0.2459 | 0.0146 | 1,046.7295 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 26.5460 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 171.6382 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0803 | 0.6861 | 0.2920 | 4.3800e-003 | | 0.0555 | 0.0555 | | 0.0555 | 0.0555 | 0.0000 | 794.6021 | 794.6021 | 0.0152 | 0.0146 | 799.3240 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Landscaping | 4.4163 | 1.6990 | 147.2399 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6393 | 241.6393 | 0.2307 | 0.0000 | 247.4055 |
| **Total** | **202.6808** | **2.3851** | **147.5319** | **0.0122** | | **0.8752** | **0.8752** | | **0.8752** | **0.8752** | **0.0000** | **1,036.2414** | **1,036.2414** | **0.2459** | **0.0146** | **1,046.7295** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 26.5460 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 171.6382 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 4.4163 | 1.6990 | 147.2399 | 7.8100e-003 | | 0.8197 | 0.8197 | | 0.8197 | 0.8197 | 0.0000 | 241.6393 | 241.6393 | 0.2307 | 0.0000 | 247.4055 |
| **Total** | **202.6005** | **1.6990** | **147.2399** | **7.8100e-003** | | **0.8197** | **0.8197** | | **0.8197** | **0.8197** | **0.0000** | **241.6393** | **241.6393** | **0.2307** | **0.0000** | **247.4055** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 4,559.2647 | 4.6838 | 2.8194 | 5,516.5380 |

| | | | | |
|---|---|---|---|---|
| Unmitigated | 6,011.1568 | 5.8860 | 3.5307 | 7,210.4527 |

## 7.2 Water by Land Use

### Unmitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 1295.91 / 816.989 | 1,757.0307 | 1.7080 | 1.0240 | 2,104.8653 |
| General Office Building | 2949.6 / 1807.82 | 3,975.3284 | 3.8850 | 2.3301 | 4,766.8202 |
| Hotel | 101.391 / 11.2657 | 113.2263 | 0.1312 | 0.0796 | 140.2304 |
| Strip Mall | 122.85 / 75.2952 | 165.5714 | 0.1618 | 0.0971 | 198.5369 |
| **Total** | | **6,011.1568** | **5.8860** | **3.5307** | **7,210.4527** |

### Mitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 1036.73 / 490.193 | 1,330.3968 | 1.3588 | 0.8176 | 1,608.0126 |
| General Office Building | 2359.68 / 1084.69 | 3,013.8002 | 3.0914 | 1.8606 | 3,645.5511 |
| Hotel | 81.1128 / 6.7594 | 89.5437 | 0.1049 | 0.0637 | 111.1380 |
| Strip Mall | 98.28 / 45.1771 | 125.5240 | 0.1288 | 0.0775 | 151.8363 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **4,559.2647** | **4.6839** | **2.8194** | **5,516.5380** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 4,630.3229 | 273.6443 | 0.0000 | 11,471.4291 |
| Unmitigated | 5,787.9037 | 342.0553 | 0.0000 | 14,339.2863 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 9149.4 | 1,857.2455 | 109.7601 | 0.0000 | 4,601.2472 |
| General Office Building | 15433.9 | 3,132.9443 | 185.1517 | 0.0000 | 7,761.7368 |
| Hotel | 2188.36 | 444.2173 | 26.2525 | 0.0000 | 1,100.5296 |
| Strip Mall | 1741.44 | 353.4966 | 20.8911 | 0.0000 | 875.7728 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **5,787.9037** | **342.0553** | **0.0000** | **14,339.2863** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 7319.52 | 1,485.7964 | 87.8081 | 0.0000 | 3,680.9977 |
| General Office Building | 12347.1 | 2,506.3554 | 148.1214 | 0.0000 | 6,209.3894 |
| Hotel | 1750.69 | 355.3738 | 21.0020 | 0.0000 | 880.4237 |
| Strip Mall | 1393.15 | 282.7973 | 16.7128 | 0.0000 | 700.6183 |
| **Total** | | **4,630.3229** | **273.6442** | **0.0000** | **11,471.4291** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

San Jose Downtown Strategy - 2030 Amended GP - Santa Clara County, Annual

# San Jose Downtown Strategy - 2030 Amended GP

**Santa Clara County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 9,715.65 | 1000sqft | 223.04 | 9,715,649.00 | 0 |
| Hotel | 2,557.00 | Room | 85.23 | 3,712,764.00 | 0 |
| Apartments High Rise | 14,142.00 | Dwelling Unit | 228.10 | 14,142,000.00 | 40446 |
| Strip Mall | 1,098.51 | 1000sqft | 25.22 | 1,098,512.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2030 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 290 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E rate

Land Use - Based on PD Table 2.0-1 (Proposed Downtown Strategy 2040)

Construction Phase - no construction

Off-road Equipment - no construction

Vehicle Trips -

Woodstoves - No wood burning

Energy Use -

Water And Wastewater - all WTP treatment

Area Mitigation -

Energy Mitigation - New building code requirements

Water Mitigation - Water conservation

Waste Mitigation - Redcue waste by 20 percent

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 360.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 10/14/2019 | 5/29/2018 |
| tblFireplaces | FireplaceWoodMass | 228.80 | 0.00 |
| tblFireplaces | NumberGas | 2,121.30 | 4,525.00 |
| tblFireplaces | NumberWood | 2,404.14 | 0.00 |
| tblLandUse | LandUseSquareFeet | 9,715,650.00 | 9,715,649.00 |
| tblLandUse | LandUseSquareFeet | 1,098,510.00 | 1,098,512.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 290 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 18.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |

| | | | |
|---|---|---|---|
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |

## 2.0 Emissions Summary

### 2.2 Overall Operational

#### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 132.6973 | 1.6962 | 105.0583 | 8.6700e-003 | | 0.6222 | 0.6222 | | 0.6222 | 0.6222 | 0.0000 | 736.6621 | 736.6621 | 0.1749 | 0.0104 | 744.1200 |
| Energy | 2.4175 | 21.6181 | 15.8258 | 0.1319 | | 1.6703 | 1.6703 | | 1.6703 | 1.6703 | 0.0000 | 59,658.1450 | 59,658.1450 | 4.0319 | 1.1779 | 60,109.9651 |
| Mobile | 29.9650 | 128.8571 | 334.3089 | 1.4214 | 163.4430 | 0.9589 | 164.4019 | 43.7400 | 0.8913 | 44.6313 | 0.0000 | 130,808.7384 | 130,808.7384 | 3.8103 | 0.0000 | 130,903.9952 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3,672.9733 | 0.0000 | 3,672.9733 | 217.0665 | 0.0000 | 9,099.6359 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 988.6770 | 2,769.9880 | 3,758.6650 | 3.6799 | 2.2074 | 4,508.4562 |
| **Total** | **165.0797** | **152.1714** | **455.1930** | **1.5619** | **163.4430** | **3.2514** | **166.6944** | **43.7400** | **3.1838** | **46.9238** | **4,661.6503** | **193,973.5335** | **198,635.1838** | **228.7634** | **3.3957** | **205,366.1722** |

#### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 132.6402 | 1.2084 | 104.8507 | 5.5500e-003 | | 0.5828 | 0.5828 | | 0.5828 | 0.5828 | 0.0000 | 171.7643 | 171.7643 | 0.1640 | 0.0000 | 175.8652 |
| Energy | 1.7939 | 16.0174 | 11.5656 | 0.0979 | | 1.2394 | 1.2394 | | 1.2394 | 1.2394 | 0.0000 | 50,340.7429 | 50,340.7429 | 3.5990 | 0.9997 | 50,728.6282 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 29.9650 | 128.8571 | 334.3089 | 1.4214 | 163.4430 | 0.9589 | 164.4019 | 43.7400 | 0.8913 | 44.6313 | 0.0000 | 130,808.7384 | 130,808.7384 | 3.8103 | 0.0000 | 130,903.9952 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 2,938.3786 | 0.0000 | 2,938.3786 | 173.6532 | 0.0000 | 7,279.7087 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 790.9416 | 2,059.7939 | 2,850.7355 | 2.9283 | 1.7627 | 3,449.2149 |
| **Total** | **164.3991** | **146.0829** | **450.7252** | **1.5248** | **163.4430** | **2.7811** | **166.2241** | **43.7400** | **2.7135** | **46.4535** | **3,729.3203** | **183,381.0395** | **187,110.3597** | **184.1548** | **2.7624** | **192,537.4122** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.41** | **4.00** | **0.98** | **2.38** | **0.00** | **14.46** | **0.28** | **0.00** | **14.77** | **1.00** | **20.00** | **5.46** | **5.80** | **19.50** | **18.65** | **6.25** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 29.9650 | 128.8571 | 334.3089 | 1.4214 | 163.4430 | 0.9589 | 164.4019 | 43.7400 | 0.8913 | 44.6313 | 0.0000 | 130,808.7384 | 130,808.7384 | 3.8103 | 0.0000 | 130,903.9952 |
| Unmitigated | 29.9650 | 128.8571 | 334.3089 | 1.4214 | 163.4430 | 0.9589 | 164.4019 | 43.7400 | 0.8913 | 44.6313 | 0.0000 | 130,808.7384 | 130,808.7384 | 3.8103 | 0.0000 | 130,903.9952 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments High Rise | 59,396.40 | 70,427.16 | 51618.30 | 138,255,554 | 138,255,554 |
| General Office Building | 107,163.61 | 23,900.50 | 10201.43 | 194,566,837 | 194,566,837 |

| | | | | | |
|---|---|---|---|---|---|
| Hotel | 20,890.69 | 20,941.83 | 15214.15 | 38,164,026 | 38,164,026 |
| Strip Mall | 48,686.05 | 46,181.44 | 22442.60 | 68,653,420 | 68,653,420 |
| Total | 236,136.75 | 161,450.93 | 99,476.48 | 439,639,837 | 439,639,837 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-... | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments High Rise | 10.80 | 4.80 | 5.70 | 31.00 | 15.00 | 54.00 | 86 | 11 | 3 |
| General Office Building | 9.50 | 7.30 | 7.30 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| Hotel | 9.50 | 7.30 | 7.30 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Strip Mall | 9.50 | 7.30 | 7.30 | 16.60 | 64.40 | 19.00 | 45 | 40 | 15 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments High Rise | 0.621541 | 0.034056 | 0.180136 | 0.101248 | 0.011859 | 0.005060 | 0.013110 | 0.022881 | 0.002221 | 0.001470 | 0.005122 | 0.000646 | 0.000651 |
| General Office Building | 0.621541 | 0.034056 | 0.180136 | 0.101248 | 0.011859 | 0.005060 | 0.013110 | 0.022881 | 0.002221 | 0.001470 | 0.005122 | 0.000646 | 0.000651 |
| Hotel | 0.621541 | 0.034056 | 0.180136 | 0.101248 | 0.011859 | 0.005060 | 0.013110 | 0.022881 | 0.002221 | 0.001470 | 0.005122 | 0.000646 | 0.000651 |
| Strip Mall | 0.621541 | 0.034056 | 0.180136 | 0.101248 | 0.011859 | 0.005060 | 0.013110 | 0.022881 | 0.002221 | 0.001470 | 0.005122 | 0.000646 | 0.000651 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 32,587.1803 | 32,587.1803 | 3.2587 | 0.6742 | 32,869.5650 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 35,732.9980 | 35,732.9980 | 3.5733 | 0.7393 | 36,042.6429 |
| NaturalGas Mitigated | 1.7939 | 16.0174 | 11.5656 | 0.0979 | | 1.2394 | 1.2394 | | 1.2394 | 1.2394 | 0.0000 | 17,753.5626 | 17,753.5626 | 0.3403 | 0.3255 | 17,859.0632 |
| NaturalGas Unmitigated | 2.4175 | 21.6181 | 15.8258 | 0.1319 | | 1.6703 | 1.6703 | | 1.6703 | 1.6703 | 0.0000 | 23,925.1470 | 23,925.1470 | 0.4586 | 0.4386 | 24,067.3222 |

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 1.22179e+008 | 0.6588 | 5.6298 | 2.3957 | 0.0359 | | 0.4552 | 0.4552 | | 0.4552 | 0.4552 | 0.0000 | 6,519.9422 | 6,519.9422 | 0.1250 | 0.1195 | 6,558.6869 |
| General Office Building | 1.59045e+008 | 0.8576 | 7.7963 | 6.5489 | 0.0468 | | 0.5925 | 0.5925 | | 0.5925 | 0.5925 | 0.0000 | 8,487.2562 | 8,487.2562 | 0.1627 | 0.1556 | 8,537.6917 |
| Hotel | 1.64513e+008 | 0.8871 | 8.0643 | 6.7741 | 0.0484 | | 0.6129 | 0.6129 | | 0.6129 | 0.6129 | 0.0000 | 8,779.0174 | 8,779.0174 | 0.1683 | 0.1610 | 8,831.1867 |
| Strip Mall | 2.60347e+006 | 0.0140 | 0.1276 | 0.1072 | 7.7000e-004 | | 9.7000e-003 | 9.7000e-003 | | 9.7000e-003 | 9.7000e-003 | 0.0000 | 138.9313 | 138.9313 | 2.6600e-003 | 2.5500e-003 | 139.7569 |
| **Total** | | **2.4175** | **21.6181** | **15.8258** | **0.1319** | | **1.6703** | **1.6703** | | **1.6703** | **1.6703** | **0.0000** | **23,925.1470** | **23,925.1470** | **0.4586** | **0.4386** | **24,067.3222** |

### Mitigated

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 9.89108e+007 | 0.5333 | 4.5577 | 1.9394 | 0.0291 | | 0.3685 | 0.3685 | | 0.3685 | 0.3685 | 0.0000 | 5,278.2556 | 5,278.2556 | 0.1012 | 0.0968 | 5,309.6216 |
| General Office Building | 1.11507e+008 | 0.6013 | 5.4660 | 4.5914 | 0.0328 | | 0.4154 | 0.4154 | | 0.4154 | 0.4154 | 0.0000 | 5,950.4117 | 5,950.4117 | 0.1141 | 0.1091 | 5,985.7720 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hotel | 1.20449e+008 | 0.6495 | 5.9044 | 4.9597 | 0.0354 | | 0.4487 | 0.4487 | | 0.4487 | 0.4487 | 0.0000 | 6,427.6435 | 6,427.6435 | 0.1232 | 0.1178 | 6,465.8397 |
| Strip Mall | 1.82243e+006 | 9.8300e-003 | 0.0893 | 0.0750 | 5.4000e-004 | | 6.7900e-003 | 6.7900e-003 | | 6.7900e-003 | 6.7900e-003 | 0.0000 | 97.2519 | 97.2519 | 1.8600e-003 | 1.7800e-003 | 97.8298 |
| **Total** | | **1.7939** | **16.0174** | **11.5656** | **0.0979** | | **1.2394** | **1.2394** | | **1.2394** | **1.2394** | **0.0000** | **17,753.5626** | **17,753.5626** | **0.3403** | **0.3255** | **17,859.0632** |

## 5.3 Energy by Land Use - Electricity

### Unmitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 5.83831e+007 | 7,679.8207 | 0.7680 | 0.1589 | 7,746.3703 |
| General Office Building | 1.7323e+008 | 22,786.9867 | 2.2787 | 0.4715 | 22,984.4477 |
| Hotel | 2.82913e+007 | 3,721.4831 | 0.3722 | 0.0770 | 3,753.7317 |
| Strip Mall | 1.17431e+007 | 1,544.7075 | 0.1545 | 0.0320 | 1,558.0932 |
| **Total** | | **35,732.9980** | **3.5733** | **0.7393** | **36,042.6429** |

### Mitigated

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 5.54699e+007 | 7,296.6045 | 0.7297 | 0.1510 | 7,359.8333 |
| General Office Building | 1.55421e+008 | 20,444.3873 | 2.0444 | 0.4230 | 20,621.5485 |
| Hotel | 2.60079e+007 | 3,421.1272 | 0.3421 | 0.0708 | 3,450.7730 |

| | | | | | |
|---|---|---|---|---|---|
| Strip Mall | 1.08335e+007 | 1,425.0613 | 0.1425 | 0.0295 | 1,437.4102 |
| **Total** | | **32,587.1803** | **3.2587** | **0.6742** | **32,869.5650** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

Use only Natural Gas Hearths

No Hearths Installed

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 132.6402 | 1.2084 | 104.8507 | 5.5500e-003 | | 0.5828 | 0.5828 | | 0.5828 | 0.5828 | 0.0000 | 171.7643 | 171.7643 | 0.1640 | 0.0000 | 175.8652 |
| Unmitigated | 132.6973 | 1.6962 | 105.0583 | 8.6700e-003 | | 0.6222 | 0.6222 | | 0.6222 | 0.6222 | 0.0000 | 736.6621 | 736.6621 | 0.1749 | 0.0104 | 744.1200 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 17.5300 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 111.9665 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hearth | 0.0571 | 0.4878 | 0.2076 | 3.1100e-003 | | 0.0394 | 0.0394 | | 0.0394 | 0.0394 | 0.0000 | 564.8978 | 564.8978 | 0.0108 | 0.0104 | 568.2547 |
| Landscaping | 3.1437 | 1.2084 | 104.8507 | 5.5500e-003 | | 0.5828 | 0.5828 | | 0.5828 | 0.5828 | 0.0000 | 171.7643 | 171.7643 | 0.1640 | 0.0000 | 175.8652 |
| **Total** | **132.6973** | **1.6962** | **105.0583** | **8.6600e-003** | | **0.6222** | **0.6222** | | **0.6222** | **0.6222** | **0.0000** | **736.6621** | **736.6621** | **0.1749** | **0.0104** | **744.1200** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 17.5300 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 111.9665 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 3.1437 | 1.2084 | 104.8507 | 5.5500e-003 | | 0.5828 | 0.5828 | | 0.5828 | 0.5828 | 0.0000 | 171.7643 | 171.7643 | 0.1640 | 0.0000 | 175.8652 |
| **Total** | **132.6402** | **1.2084** | **104.8507** | **5.5500e-003** | | **0.5828** | **0.5828** | | **0.5828** | **0.5828** | **0.0000** | **171.7643** | **171.7643** | **0.1640** | **0.0000** | **175.8652** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |

| | | | | |
|---|---|---|---|---|
| Mitigated | 2,850.7355 | 2.9283 | 1.7627 | 3,449.2149 |
| Unmitigated | 3,758.6650 | 3.6799 | 2.2074 | 4,508.4562 |

## 7.2 Water by Land Use

### Unmitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 921.408 / 580.888 | 1,249.2674 | 1.2144 | 0.7280 | 1,496.5814 |
| General Office Building | 1726.8 / 1058.36 | 2,327.2976 | 2.2744 | 1.3641 | 2,790.6648 |
| Hotel | 64.8628 / 7.20698 | 72.4342 | 0.0839 | 0.0509 | 89.7096 |
| Strip Mall | 81.3694 / 49.8716 | 109.6658 | 0.1072 | 0.0643 | 131.5004 |
| **Total** | | **3,758.6650** | **3.6799** | **2.2074** | **4,508.4562** |

### Mitigated

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 737.127 / 348.533 | 945.9262 | 0.9662 | 0.5813 | 1,143.3139 |
| General Office Building | 1381.44 / 635.016 | 1,764.3850 | 1.8098 | 1.0893 | 2,134.2343 |
| Hotel | 51.8903 / 4.32419 | 57.2838 | 0.0671 | 0.0407 | 71.0983 |

| | | | | | |
|---|---|---|---|---|---|
| Strip Mall | 65.0955 / 29.9229 | 83.1405 | 0.0853 | 0.0513 | 100.5684 |
| **Total** | | **2,850.7355** | **2.9283** | **1.7627** | **3,449.2149** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 2,938.3786 | 173.6532 | 0.0000 | 7,279.7087 |
| Unmitigated | 3,672.9733 | 217.0665 | 0.0000 | 9,099.6359 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 6505.32 | 1,320.5212 | 78.0406 | 0.0000 | 3,271.5353 |
| General Office Building | 9035.55 | 1,834.1350 | 108.3943 | 0.0000 | 4,543.9918 |
| Hotel | 1399.96 | 284.1792 | 16.7945 | 0.0000 | 704.0420 |

| | | | | | |
|---|---|---|---|---|---|
| Strip Mall | 1153.44 | 234.1379 | 13.8372 | 0.0000 | 580.0667 |
| **Total** | | **3,672.9733** | **217.0665** | **0.0000** | **9,099.6359** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 5204.26 | 1,056.4169 | 62.4325 | 0.0000 | 2,617.2283 |
| General Office Building | 7228.44 | 1,467.3080 | 86.7154 | 0.0000 | 3,635.1935 |
| Hotel | 1119.97 | 227.3434 | 13.4356 | 0.0000 | 563.2336 |
| Strip Mall | 922.752 | 187.3103 | 11.0697 | 0.0000 | 464.0534 |
| **Total** | | **2,938.3786** | **173.6532** | **0.0000** | **7,279.7087** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

**Attachment 2: Mobile Emission Calculations and Summary Total Emissions**

Emissions in Pounds per Day

| Speed Interval | 2015 Morning | Midday | Afternoon | Night | Daily | time | ROG | CO | NOx | CO2 | CH4 | PM10 | PM2.5 | ROG (RL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 499 | 630 | 862 | 203 | 2,194 | 878 | 1.83 | 15.96 | 4.87 | 6,084 | 0.45 | 1.04 | 0.22 | 4.51 |
| 5 - 10 | 306 | 105 | 889 | 0 | 1,300 | 173 | 0.74 | 7.99 | 2.44 | 2,742 | 0.17 | 0.60 | 0.11 | 0.89 |
| 10 - 15 | 2,693 | 757 | 6,168 | 261 | 9,879 | 790 | 3.68 | 51.99 | 14.40 | 16,092 | 0.88 | 4.41 | 0.71 | 4.06 |
| 15 - 20 | 17,268 | 12,080 | 24,295 | 4,946 | 58,589 | 3,348 | 14.86 | 269.83 | 70.62 | 76,906 | 3.68 | 25.61 | 3.71 | 17.20 |
| 20 - 25 | 30,507 | 37,774 | 46,707 | 15,542 | 130,530 | 5,801 | 25.04 | 537.14 | 141.67 | 144,075 | 6.16 | 56.49 | 7.72 | 29.81 |
| 25 - 30 | 23,353 | 18,906 | 33,705 | 7,586 | 83,550 | 3,038 | 12.81 | 311.77 | 84.66 | 80,387 | 3.13 | 35.94 | 4.74 | 15.61 |
| 30 - 35 | 12,655 | 10,465 | 21,342 | 3,849 | 48,311 | 1,486 | 6.18 | 165.52 | 46.57 | 42,016 | 1.50 | 20.70 | 2.66 | 7.64 |
| 35 - 40 | 10,603 | 5,210 | 18,775 | 777 | 35,365 | 943 | 3.96 | 112.64 | 32.93 | 28,693 | 0.96 | 15.12 | 1.92 | 4.85 |
| 40 - 45 | 17,609 | 8,445 | 21,685 | 2,930 | 50,669 | 1,192 | 5.20 | 152.05 | 46.22 | 39,574 | 1.26 | 21.64 | 2.73 | 6.13 |
| 45 - 50 | 11,380 | 9,002 | 19,752 | 102 | 40,236 | 847 | 3.99 | 115.54 | 36.42 | 31,301 | 0.96 | 17.20 | 2.18 | 4.35 |
| 50 - 55 | 14,016 | 12,849 | 16,688 | 405 | 43,958 | 837 | 4.44 | 123.11 | 39.96 | 35,180 | 1.07 | 18.83 | 2.42 | 4.30 |
| 55 - 60 | 20,210 | 52,655 | 17,230 | 31,902 | 121,997 | 2,122 | 13.21 | 341.52 | 112.79 | 103,692 | 3.16 | 52.38 | 6.83 | 10.90 |
| 60 - 65 | 7,115 | 38,502 | 6,708 | 20,034 | 72,359 | 1,158 | 8.78 | 208.98 | 68.71 | 67,547 | 2.10 | 31.12 | 4.10 | 5.95 |
| Totals | 168,214 | 207,380 | 234,806 | 88,537 | 698,937 | | 105 | 2,414 | 702 | 674,289 | 25 | 301 | 40 | 116.21 |

| Speed Interval | 2040 Existing GP Morning | Midday | Afternoon | Night | Daily | time | ROG | CO | NOx | CO2 | CH4 | PM10 | PM2.5 | ROG (RL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 1,699 | 1,054 | 4,530 | 385 | 7,668 | 3,067 | 1.95 | 15.58 | 11.49 | 12,131 | 0.52 | 0.92 | 0.41 | 4.78 |
| 5 - 10 | 9,117 | 402 | 26,342 | 0 | 35,861 | 4,781 | 6.15 | 62.07 | 41.28 | 43,661 | 1.65 | 4.17 | 1.80 | 7.46 |
| 10 - 15 | 46,762 | 2,442 | 69,705 | 599 | 119,508 | 9,561 | 13.64 | 172.70 | 85.93 | 112,953 | 3.66 | 13.62 | 5.74 | 14.91 |
| 15 - 20 | 76,415 | 38,190 | 123,309 | 15,351 | 253,265 | 14,472 | 20.09 | 314.15 | 109.78 | 194,235 | 5.38 | 28.51 | 11.83 | 22.58 |
| 20 - 25 | 85,064 | 108,748 | 110,274 | 46,306 | 350,392 | 15,573 | 20.67 | 385.39 | 93.26 | 228,270 | 5.53 | 39.14 | 16.08 | 24.29 |
| 25 - 30 | 54,608 | 58,458 | 84,394 | 23,333 | 220,793 | 8,029 | 10.19 | 218.82 | 41.82 | 126,646 | 2.72 | 24.54 | 10.02 | 12.53 |
| 30 - 35 | 31,565 | 32,642 | 39,295 | 11,475 | 114,977 | 3,538 | 4.34 | 103.82 | 16.98 | 60,057 | 1.15 | 12.74 | 5.18 | 5.52 |
| 35 - 40 | 28,242 | 21,067 | 28,940 | 1,641 | 79,890 | 2,130 | 2.58 | 66.42 | 9.82 | 39,072 | 0.68 | 8.83 | 3.58 | 3.32 |
| 40 - 45 | 21,736 | 35,529 | 23,902 | 6,783 | 87,950 | 2,069 | 2.55 | 68.05 | 9.44 | 41,431 | 0.67 | 9.71 | 3.93 | 3.23 |
| 45 - 50 | 15,173 | 30,475 | 14,742 | 249 | 60,639 | 1,277 | 1.67 | 44.20 | 5.91 | 28,345 | 0.44 | 6.69 | 2.71 | 1.99 |
| 50 - 55 | 13,197 | 49,240 | 13,050 | 1,123 | 76,610 | 1,459 | 2.10 | 53.36 | 7.00 | 36,563 | 0.55 | 8.45 | 3.42 | 2.28 |
| 55 - 60 | 16,067 | 79,907 | 14,103 | 62,375 | 172,452 | 2,999 | 5.03 | 117.22 | 15.57 | 86,614 | 1.32 | 19.04 | 7.71 | 4.68 |
| 60 - 65 | 10,230 | 42,674 | 9,635 | 47,946 | 110,485 | 1,768 | 3.64 | 75.27 | 10.24 | 60,350 | 0.95 | 12.22 | 4.96 | 2.76 |
| Totals | 409,875 | 500,828 | 562,221 | 217,566 | 1,690,490 | | 95 | 1,697 | 459 | 1,070,326 | 25 | 189 | 77 | 110.33 |

| Speed Interval | 2040 Amended GP Morning | Midday | Afternoon | Night | Daily | time | ROG | CO | NOx | CO2 | CH4 | PM10 | PM2.5 | ROG (RL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 1,791 | 1,181 | 5,135 | 424 | 8,531 | 3,412 | 2.17 | 17.34 | 12.78 | 13,495.74 | 0.58 | 1.03 | 0.46 | 5.32 |
| 5 - 10 | 11279 | 464 | 30,360 | 0 | 42,103 | 5,614 | 7.22 | 72.87 | 48.47 | 51,260 | 1.94 | 4.90 | 2.11 | 8.76 |
| 10 - 15 | 53,270 | 3,233 | 77,111 | 689 | 134,303 | 10,744 | 15.33 | 194.08 | 96.57 | 126,936 | 4.11 | 15.31 | 6.45 | 16.76 |
| 15 - 20 | 84,757 | 42,169 | 137,315 | 17,204 | 281,445 | 16,083 | 22.32 | 349.10 | 122.00 | 215,847 | 5.98 | 31.69 | 13.15 | 25.09 |
| 20 - 25 | 93,128 | 120,864 | 121,218 | 51,649 | 386,859 | 17,194 | 22.82 | 425.50 | 102.97 | 252,027 | 6.11 | 43.21 | 17.76 | 26.82 |
| 25 - 30 | 58,991 | 64,558 | 93,210 | 26,133 | 242,892 | 8,832 | 11.21 | 240.72 | 46.01 | 139,322 | 2.99 | 27.00 | 11.02 | 13.78 |
| 30 - 35 | 36,580 | 37,855 | 41,083 | 12,947 | 128,465 | 3,953 | 4.84 | 116.00 | 18.98 | 67,103 | 1.29 | 14.23 | 5.79 | 6.17 |
| 35 - 40 | 32,278 | 21,908 | 35,672 | 1,836 | 91,694 | 2,445 | 2.96 | 76.23 | 11.27 | 44,845 | 0.78 | 10.14 | 4.11 | 3.81 |
| 40 - 45 | 24,286 | 41,335 | 26,106 | 7,613 | 99,340 | 2,337 | 2.88 | 76.87 | 10.67 | 46,797 | 0.76 | 10.97 | 4.44 | 3.65 |
| 45 - 50 | 16,237 | 33,841 | 16,230 | 390 | 66,698 | 1,404 | 1.83 | 48.61 | 6.50 | 31,178 | 0.48 | 7.36 | 2.98 | 2.19 |
| 50 - 55 | 14,754 | 54,085 | 14,725 | 1,163 | 84,727 | 1,614 | 2.32 | 59.01 | 7.74 | 40,436 | 0.61 | 9.35 | 3.78 | 2.52 |
| 55 - 60 | 18,634 | 88,102 | 15,531 | 69,358 | 191,625 | 3,333 | 5.59 | 130.26 | 17.30 | 96,243 | 1.46 | 21.16 | 8.57 | 5.20 |
| 60 - 65 | 11,050 | 48,097 | 11,117 | 53,522 | 123,786 | 1,981 | 4.08 | 84.33 | 11.47 | 67,615 | 1.06 | 13.69 | 5.55 | 3.09 |
| Totals | 457,035 | 557,692 | 624,813 | 242,928 | 1,882,468 | | 106 | 1,891 | 513 | 1,193,105 | 28 | 210 | 86 | 123.16 |

| Speed Interval | 2040 Alternative 1 Morning | Midday | Afternoon | Night | Daily | time | ROG | CO | NOx | CO2 | CH4 | PM10 | PM2.5 | ROG (RL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 1,974 | 1,201 | 5,300 | 432 | 8,907 | 3,563 | 2.26 | 18.10 | 13.35 | 14,091 | 0.61 | 1.07 | 0.48 | 5.56 |
| 5 - 10 | 12084 | 439 | 30,961 | 1 | 43,485 | 5,798 | 7.46 | 75.26 | 50.06 | 52,943 | 2.00 | 5.06 | 2.18 | 9.04 |
| 10 - 15 | 52,707 | 3,288 | 81,352 | 662 | 138,009 | 11,041 | 15.75 | 199.43 | 99.24 | 130,439 | 4.22 | 15.73 | 6.63 | 17.22 |
| 15 - 20 | 86,068 | 41,981 | 134,843 | 17,189 | 280,081 | 16,005 | 22.21 | 347.41 | 121.41 | 214,801 | 5.96 | 31.53 | 13.08 | 24.97 |
| 20 - 25 | 93,497 | 121,608 | 117,134 | 51,944 | 384,183 | 17,075 | 22.66 | 422.56 | 102.26 | 250,284 | 6.06 | 42.92 | 17.64 | 26.64 |
| 25 - 30 | 57,578 | 64,614 | 91,298 | 26,274 | 239,764 | 8,719 | 11.06 | 237.62 | 45.42 | 137,528 | 2.95 | 26.65 | 10.88 | 13.60 |
| 30 - 35 | 35,989 | 37,661 | 44,696 | 12,993 | 131,339 | 4,041 | 4.95 | 118.59 | 19.40 | 68,604 | 1.32 | 14.55 | 5.92 | 6.30 |
| 35 - 40 | 33,722 | 22,244 | 32,275 | 1,882 | 90,123 | 2,403 | 2.91 | 74.93 | 11.08 | 44,076 | 0.77 | 9.96 | 4.04 | 3.75 |
| 40 - 45 | 23,038 | 40,546 | 27,718 | 7,614 | 98,916 | 2,327 | 2.87 | 76.54 | 10.62 | 46,597 | 0.76 | 10.92 | 4.42 | 3.63 |
| 45 - 50 | 16,269 | 33,239 | 15,225 | 381 | 65,114 | 1,371 | 1.79 | 47.46 | 6.35 | 30,437 | 0.47 | 7.18 | 2.91 | 2.14 |
| 50 - 55 | 14,590 | 54,292 | 14,091 | 1,123 | 84,096 | 1,602 | 2.31 | 58.57 | 7.69 | 40,135 | 0.60 | 9.28 | 3.75 | 2.50 |
| 55 - 60 | 18,580 | 87,673 | 16,176 | 68,818 | 191,247 | 3,326 | 5.58 | 130.00 | 17.26 | 96,053 | 1.46 | 21.12 | 8.55 | 5.19 |
| 60 - 65 | 10,969 | 47,682 | 11,246 | 53,222 | 123,119 | 1,970 | 4.05 | 83.88 | 11.41 | 67,251 | 1.06 | 13.61 | 5.52 | 3.07 |
| Totals | 457,065 | 556,468 | 622,315 | 242,535 | 1,878,383 | | 106 | 1,890 | 516 | 1,193,238 | 28 | 210 | 86 | 123.62 |

| Speed Interval | 2040 Alternative 2 Morning | Midday | Afternoon | Night | Daily | time | ROG | CO | NOx | CO2 | CH4 | PM10 | PM2.5 | ROG (RL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 1,991 | 1,234 | 5,157 | 449 | 8,831 | 3,532 | 2.24 | 17.95 | 13.23 | 13,970 | 0.60 | 1.06 | 0.48 | 5.51 |
| 5 - 10 | 12216 | 464 | 33,388 | 1 | 46,069 | 6,143 | 7.90 | 79.73 | 53.03 | 56,089 | 2.12 | 5.36 | 2.31 | 9.58 |
| 10 - 15 | 55,521 | 3,384 | 83,677 | 696 | 143,278 | 11,462 | 16.35 | 207.05 | 103.02 | 135,419 | 4.38 | 16.33 | 6.88 | 17.88 |
| 15 - 20 | 88,515 | 43,371 | 136,744 | 17,740 | 286,370 | 16,364 | 22.71 | 355.21 | 124.13 | 219,624 | 6.09 | 32.24 | 13.38 | 25.53 |
| 20 - 25 | 94,040 | 124,716 | 123,393 | 53,378 | 395,527 | 17,579 | 23.33 | 435.03 | 105.28 | 257,674 | 6.24 | 44.18 | 18.16 | 27.42 |
| 25 - 30 | 62,841 | 66,995 | 93,267 | 26,912 | 250,015 | 9,091 | 11.53 | 247.78 | 47.36 | 143,408 | 3.08 | 27.79 | 11.35 | 14.18 |
| 30 - 35 | 36,124 | 38,094 | 45,939 | 13,386 | 133,543 | 4,109 | 5.04 | 120.58 | 19.73 | 69,755 | 1.34 | 14.79 | 6.02 | 6.41 |
| 35 - 40 | 32,643 | 23,459 | 32,214 | 1,948 | 90,264 | 2,407 | 2.91 | 75.04 | 11.09 | 44,145 | 0.77 | 9.98 | 4.05 | 3.76 |
| 40 - 45 | 25,636 | 41,558 | 29,974 | 7,847 | 105,015 | 2,471 | 3.05 | 81.26 | 11.28 | 49,470 | 0.80 | 11.59 | 4.69 | 3.85 |
| 45 - 50 | 16,671 | 34,785 | 15,676 | 408 | 67,540 | 1,422 | 1.85 | 49.23 | 6.58 | 31,571 | 0.49 | 7.45 | 3.02 | 2.22 |
| 50 - 55 | 14,916 | 56,022 | 14,973 | 1,174 | 87,085 | 1,659 | 2.39 | 60.65 | 7.96 | 41,562 | 0.63 | 9.61 | 3.89 | 2.59 |
| 55 - 60 | 19,549 | 90,568 | 15,952 | 71,166 | 197,235 | 3,430 | 5.76 | 134.07 | 17.80 | 99,061 | 1.51 | 21.78 | 8.82 | 5.35 |
| 60 - 65 | 11,360 | 49,722 | 11,564 | 55,355 | 128,001 | 2,048 | 4.21 | 87.20 | 11.86 | 69,918 | 1.10 | 14.15 | 5.74 | 3.19 |
| Totals | 472,023 | 574,372 | 641,918 | 250,460 | 1,938,773 | | 109 | 1,951 | 532 | 1,231,666 | 29 | 216 | 89 | 127.48 |

| Speed Interval | 2030 Amended GP Morning | Midday | Afternoon | Night | Daily | time | ROG | CO | NOx | CO2 | CH4 | PM10 | PM2.5 | ROG (RL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 925 | 943 | 2,153 | 346 | 4,367 | 1,747 | 1.28 | 10.95 | 6.57 | 7,699 | 0.36 | 0.56 | 0.19 | 4.01 |
| 5 - 10 | 2569 | 236 | 7,929 | 0 | 10,734 | 1,431 | 2.11 | 23.13 | 12.55 | 14,509 | 0.59 | 1.31 | 0.46 | 3.28 |
| 10 - 15 | 19,794 | 1,873 | 34,967 | 481 | 57,115 | 4,569 | 7.47 | 104.46 | 43.15 | 59,842 | 2.08 | 6.73 | 2.46 | 10.48 |
| 15 - 20 | 55,950 | 29,399 | 76,645 | 12,018 | 174,012 | 9,944 | 15.85 | 276.62 | 83.99 | 147,686 | 4.41 | 20.05 | 7.51 | 22.81 |
| 20 - 25 | 72,509 | 84,222 | 109,344 | 36,420 | 302,495 | 13,444 | 20.53 | 429.19 | 97.43 | 217,509 | 5.70 | 34.38 | 13.05 | 30.84 |
| 25 - 30 | 46,789 | 47,311 | 64,053 | 18,752 | 176,905 | 6,433 | 9.41 | 227.11 | 43.51 | 111,659 | 2.61 | 19.94 | 7.63 | 14.75 |
| 30 - 35 | 30,743 | 25,616 | 45,461 | 9,336 | 111,156 | 3,420 | 4.85 | 130.39 | 22.62 | 63,744 | 1.34 | 12.46 | 4.80 | 7.84 |
| 35 - 40 | 26,771 | 11,227 | 34,404 | 1,473 | 73,875 | 1,970 | 2.77 | 79.93 | 13.14 | 39,629 | 0.76 | 8.25 | 3.19 | 4.52 |
| 40 - 45 | 25,720 | 25,458 | 32,887 | 5,816 | 89,881 | 2,115 | 3.04 | 90.55 | 14.55 | 46,414 | 0.84 | 10.02 | 3.88 | 4.85 |
| 45 - 50 | 19,531 | 22,617 | 18,989 | 220 | 61,357 | 1,292 | 1.97 | 58.18 | 9.33 | 31,470 | 0.54 | 6.83 | 2.65 | 2.96 |
| 50 - 55 | 18,146 | 32,782 | 16,449 | 1,014 | 68,391 | 1,303 | 2.20 | 61.82 | 10.02 | 35,906 | 0.61 | 7.62 | 2.95 | 2.99 |
| 55 - 60 | 17,614 | 91,995 | 16,637 | 56,791 | 183,037 | 3,183 | 6.29 | 160.63 | 26.84 | 101,446 | 1.72 | 20.41 | 7.90 | 7.30 |
| 60 - 65 | 10,761 | 49,381 | 12,972 | 40,836 | 113,950 | 1,823 | 4.42 | 99.38 | 17.23 | 68,884 | 1.21 | 12.74 | 4.92 | 4.18 |
| Totals | 347,822 | 423,060 | 472,890 | 183,503 | 1,427,275 | | 82 | 1,752 | 401 | 946,397 | 23 | 161 | 62 | 120.82 |

## Emissions Factors from CT-EMFAC2014

2015

| Pollutant Name | | ROG | CO | NOx | CO2 | CH4 | PM10 ex | PM2.5 ex |
|---|---|---|---|---|---|---|---|---|
| idle | g/hr | 0.9964 | 9.7673 | 3.3211 | 3151.7451 | 0.2905 | 0.0496 | 0.0465 |
| 5 mph | g/mi | 0.3786 | 3.3017 | 1.0073 | 1258.9631 | 0.0923 | 0.0265 | 0.0249 |
| 10 mph | g/mi | 0.2585 | 2.7897 | 0.8507 | 957.5607 | 0.0607 | 0.0198 | 0.0186 |
| 15 mph | g/mi | 0.1690 | 2.3892 | 0.6618 | 739.5162 | 0.0406 | 0.0136 | 0.0128 |
| 20 mph | g/mi | 0.1151 | 2.0909 | 0.5473 | 595.9360 | 0.0285 | 0.0095 | 0.0090 |
| 25 mph | g/mi | 0.0871 | 1.8683 | 0.4928 | 501.1097 | 0.0214 | 0.0075 | 0.0071 |
| 30 mph | g/mi | 0.0696 | 1.6941 | 0.4600 | 436.8116 | 0.0170 | 0.0063 | 0.0060 |
| 35 mph | g/mi | 0.0581 | 1.5555 | 0.4376 | 394.8447 | 0.0141 | 0.0055 | 0.0052 |
| 40 mph | g/mi | 0.0508 | 1.4460 | 0.4228 | 368.3503 | 0.0123 | 0.0051 | 0.0048 |
| 45 mph | g/mi | 0.0466 | 1.3624 | 0.4141 | 354.5907 | 0.0113 | 0.0050 | 0.0047 |
| 50 mph | g/mi | 0.0450 | 1.3037 | 0.4109 | 353.1797 | 0.0109 | 0.0051 | 0.0049 |
| 55 mph | g/mi | 0.0459 | 1.2715 | 0.4127 | 363.3442 | 0.0110 | 0.0055 | 0.0053 |
| 60 mph | g/mi | 0.0491 | 1.2709 | 0.4198 | 385.8805 | 0.0118 | 0.0059 | 0.0056 |
| 65 mph | g/mi | 0.0551 | 1.3112 | 0.4311 | 423.8076 | 0.0132 | 0.0063 | 0.0059 |
| 70 mph | g/mi | 0.0594 | 1.3520 | 0.4388 | 449.5912 | 0.0143 | 0.0065 | 0.0062 |
| 75 mph | g/mi | 0.0594 | 1.3520 | 0.4388 | 449.5912 | 0.0143 | 0.0065 | 0.0062 |
| Tire | g/mi | | | | | | 0.0086 | 0.0022 |
| Brake | g/mi | | | | | | 0.0411 | 0.0176 |
| RL | g/hr | 2.3331 | | | | | | |

2030

| Pollutant Name | | ROG | CO | NOx | CO2 | CH4 | PM10 ex | PM2.5 ex |
|---|---|---|---|---|---|---|---|---|
| idle | g/hr | 0.3904 | 3.5646 | 1.3863 | 1992.6661 | 0.1094 | 0.0277 | 0.0258 |
| 5 mph | g/mi | 0.1328 | 1.1383 | 0.6829 | 800.4271 | 0.0372 | 0.0092 | 0.0085 |
| 10 mph | g/mi | 0.0892 | 0.9783 | 0.5309 | 613.6625 | 0.0248 | 0.0060 | 0.0056 |
| 15 mph | g/mi | 0.0594 | 0.8303 | 0.3430 | 475.6788 | 0.0165 | 0.0041 | 0.0038 |
| 20 mph | g/mi | 0.0413 | 0.7217 | 0.2191 | 385.3142 | 0.0115 | 0.0030 | 0.0027 |
| 25 mph | g/mi | 0.0308 | 0.6441 | 0.1462 | 326.4480 | 0.0086 | 0.0022 | 0.0021 |
| 30 mph | g/mi | 0.0241 | 0.5829 | 0.1117 | 286.5564 | 0.0067 | 0.0018 | 0.0017 |
| 35 mph | g/mi | 0.0198 | 0.5326 | 0.0924 | 260.3537 | 0.0055 | 0.0015 | 0.0014 |
| 40 mph | g/mi | 0.0170 | 0.4912 | 0.0808 | 243.5378 | 0.0047 | 0.0013 | 0.0012 |
| 45 mph | g/mi | 0.0154 | 0.4574 | 0.0735 | 234.4450 | 0.0042 | 0.0012 | 0.0011 |
| 50 mph | g/mi | 0.0146 | 0.4305 | 0.0690 | 232.8536 | 0.0040 | 0.0012 | 0.0011 |
| 55 mph | g/mi | 0.0146 | 0.4104 | 0.0665 | 238.3533 | 0.0040 | 0.0012 | 0.0011 |
| 60 mph | g/mi | 0.0156 | 0.3984 | 0.0666 | 251.6235 | 0.0043 | 0.0013 | 0.0012 |
| 65 mph | g/mi | 0.0176 | 0.3960 | 0.0686 | 274.4492 | 0.0048 | 0.0014 | 0.0013 |
| 70 mph | g/mi | 0.0191 | 0.3990 | 0.0701 | 289.9987 | 0.0052 | 0.0015 | 0.0014 |
| 75 mph | g/mi | 0.0191 | 0.3990 | 0.0701 | 289.9987 | 0.0052 | 0.0015 | 0.0014 |
| Tire | g/mi | | | | | | 0.0087 | 0.0022 |
| Brake | g/mi | | | | | | 0.0406 | 0.0174 |
| RL | g/hr | 1.0413 | | | | | | |

2040

| Pollutant Name | | ROG | CO | NOx | CO2 | CH4 | PM10 ex | PM2.5 ex |
|---|---|---|---|---|---|---|---|---|
| idle | g/hr | 0.3263 | 2.8963 | 1.1370 | 1782.7007 | 0.0852 | 0.0167 | 0.0155 |
| 5 mph | g/mi | 0.1153 | 0.9227 | 0.6803 | 718.2120 | 0.0310 | 0.0052 | 0.0048 |
| 10 mph | g/mi | 0.0779 | 0.7858 | 0.5226 | 552.7434 | 0.0209 | 0.0035 | 0.0032 |
| 15 mph | g/mi | 0.0518 | 0.6561 | 0.3264 | 429.0969 | 0.0139 | 0.0024 | 0.0022 |
| 20 mph | g/mi | 0.0360 | 0.5631 | 0.1968 | 348.1831 | 0.0097 | 0.0017 | 0.0016 |
| 25 mph | g/mi | 0.0268 | 0.4993 | 0.1208 | 295.7672 | 0.0072 | 0.0013 | 0.0012 |
| 30 mph | g/mi | 0.0209 | 0.4499 | 0.0860 | 260.4127 | 0.0056 | 0.0011 | 0.0010 |
| 35 mph | g/mi | 0.0171 | 0.4099 | 0.0671 | 237.1437 | 0.0046 | 0.0009 | 0.0009 |
| 40 mph | g/mi | 0.0147 | 0.3774 | 0.0558 | 222.0377 | 0.0039 | 0.0008 | 0.0008 |
| 45 mph | g/mi | 0.0132 | 0.3513 | 0.0487 | 213.8679 | 0.0035 | 0.0008 | 0.0007 |
| 50 mph | g/mi | 0.0125 | 0.3309 | 0.0443 | 212.2203 | 0.0033 | 0.0007 | 0.0007 |
| 55 mph | g/mi | 0.0125 | 0.3162 | 0.0415 | 216.6739 | 0.0033 | 0.0007 | 0.0007 |
| 60 mph | g/mi | 0.0132 | 0.3086 | 0.0410 | 228.0206 | 0.0035 | 0.0008 | 0.0007 |
| 65 mph | g/mi | 0.0149 | 0.3093 | 0.0421 | 247.9878 | 0.0039 | 0.0008 | 0.0008 |
| 70 mph | g/mi | 0.0162 | 0.3133 | 0.0428 | 261.5934 | 0.0042 | 0.0009 | 0.0008 |
| 75 mph | g/mi | 0.0162 | 0.3133 | 0.0428 | 261.5934 | 0.0042 | 0.0009 | 0.0008 |
| Tire | g/mi | | | | | | 0.0088 | 0.0022 |
| Brake | g/mi | | | | | | 0.0406 | 0.0174 |
| RL | g/hr | 0.7082 | | | | | | |

**Daily Emissions in Pounds Per day**

| | ROG | CO | NOx | PM10 | PM2.5 | CO2e |
|---|---|---|---|---|---|---|
| **2015** | 220.93 | 2,414.05 | 702.27 | 301.07 | 40.05 | 674,824 |
| **2030 Amended GP** | 125.23 | 1,752.34 | 400.93 | 161.29 | 61.59 | 946,875 |
| **2040 Existing GP** | 204.91 | 1,697.04 | 458.54 | 188.60 | 77.38 | 1,070,856 |
| **2040 Amended GP** | 228.73 | 1,890.92 | 512.73 | 210.03 | 86.17 | 1,193,696 |
| **2040 Alternative 1** | 229.49 | 1,890.35 | 515.53 | 209.59 | 86.01 | 1,193,831 |
| **2040 Alternative 2** | 236.76 | 1,950.79 | 532.37 | 216.33 | 88.77 | 1,232,278 |

**Annual Emissions in Tons per Year (MT for CO2e)**

| | ROG | CO | NOx | PM10 | PM2.5 | CO2e |
|---|---|---|---|---|---|---|
| **2015** | 40.32 | 440.56 | 128.16 | 54.95 | 7.31 | 111,727 |
| **2030 Amended GP** | 22.85 | 319.80 | 73.17 | 29.43 | 11.24 | 156,768 |
| **2040 Existing GP** | 37.40 | 309.71 | 83.68 | 34.42 | 14.12 | 177,295 |
| **2040 Amended GP** | 41.74 | 345.09 | 93.57 | 38.33 | 15.73 | 197,633 |
| **2040 Alternative 1** | 41.88 | 344.99 | 94.08 | 38.25 | 15.70 | 197,656 |
| **2040 Alternative 2** | 43.21 | 356.02 | 97.16 | 39.48 | 16.20 | 204,021 |

| | Emissions in Tons/year (MT for CO2e) | | | | |
|---|---|---|---|---|---|
| Scenario/Source | ROG | CO | NOx | PM10 | PM2.5 |
| 2015 | | | | | |
| Area | 35.84 | 41.93 | 0.68 | 0.24 | 0.24 |
| Energy | 0.50 | 2.82 | 4.44 | 0.35 | 0.35 |
| Mobile | 40.32 | 440.56 | 128.16 | 54.95 | 7.31 |
| Waste | | | | | |
| Water | | | | | |
| | 77 | 485 | 133 | 56 | 8 |
| 2030 AmendGP | | | | | |
| Area | 132.64 | 104.85 | 1.21 | 0.58 | 0.58 |
| Energy | 1.79 | 11.57 | 16.02 | 1.24 | 1.24 |
| Mobile | 22.85 | 319.80 | 73.17 | 29.43 | 11.24 |
| Waste | | | | | |
| Water | | | | | |
| | 157 | 436 | 90 | 31 | 13 |
| 2040 Ex GP | | | | | |
| Area | 164.97 | 118.30 | 1.37 | 0.66 | 0.66 |
| Energy | 2.40 | 15.91 | 21.49 | 1.66 | 1.66 |
| Mobile | 37.40 | 309.71 | 83.68 | 34.42 | 14.12 |
| Waste | | | | | |
| Water | | | | | |
| | 205 | 444 | 107 | 37 | 16 |
| 2040 AmendGP | | | | | |
| Area | 197.28 | 147.23 | 1.70 | 0.82 | 0.82 |
| Energy | 2.73 | 17.87 | 24.44 | 1.89 | 1.89 |
| Mobile | 41.74 | 345.09 | 93.57 | 38.33 | 15.73 |
| Waste | | | | | |
| Water | | | | | |
| | 242 | 510 | 120 | 41 | 18 |
| 2040 AmenGP Alt1 | | | | | |
| Area | 197.28 | 147.23 | 1.70 | 0.82 | 0.82 |
| Energy | 2.73 | 17.87 | 24.44 | 1.89 | 1.89 |
| Mobile | 41.88 | 344.99 | 94.08 | 38.25 | 15.70 |
| Waste | | | | | |
| Water | | | | | |
| | 242 | 510 | 120 | 41 | 18 |
| 2040 AmendGP Alt2 | | | | | |
| Area | 202.60 | 147.24 | 1.70 | 0.82 | 0.82 |
| Energy | 2.81 | 18.44 | 25.12 | 1.94 | 1.94 |
| Mobile | 43.21 | 356.02 | 97.16 | 39.48 | 16.20 |
| Waste | | | | | |
| Water | | | | | |
| | 249 | 522 | 124 | 42 | 19 |

## Downtown San Jose Strategy - 2040

| Scenario/Source | CO2e (in metric tons) | Daily VMT | Population | Employment | Per Capita |
|---|---|---|---|---|---|
| 2015 | | 698937 | 12548 | 33608 | 2.83 |
| Area | 291 | | | | |
| Energy | 15,083 | | | | |
| Mobile | 111,727 | | | | |
| Waste | 2,084 | | | | |
| Water | 1,263 | | | | |
| | 130,448 | | | | |
| 2030 AmendGP | | 220793 | 29698 | 73442 | 2.12 |
| Area | 176 | | | | |
| Energy | 50,729 | | | | |
| Mobile | 156,768 | | | | |
| Waste | 7,280 | | | | |
| Water | 3,449 | | | | |
| | 218,402 | | | | |
| 2040 Ex GP | | 1690490 | 34104 | 82108 | 2.21 |
| Area | 199 | | 3.3 | | |
| Energy | 66,036 | | | | |
| Mobile | 177,295 | | | | |
| Waste | 9,162 | | | | |
| Water | 4,275 | | | | |
| | 256,967 | | | | |
| 2040 AmendGP | | 1882468 | 42704 | 92108 | 2.17 |
| Area | 247 | | 3.0 | | |
| Energy | 77,801 | | | | |
| Mobile | 197,633 | | | | |
| Waste | 11,022 | | | | |
| Water | 5,253 | | | | |
| | 291,956 | | | | |
| 2040 AmenGP Alt1 | | 1878383 | 42704 | 92108 | 2.17 |
| Area | 247 | | | | |
| Energy | 77,801 | | | | |
| Mobile | 197,656 | | | | |
| Waste | 11,022 | | | | |
| Water | 5,253 | | | | |
| | 291,979 | | | | |
| 2040 AmendGP Alt2 | | 1938773 | 42704 | 96108 | 2.18 |
| Area | 247 | | | | |
| Energy | 81,087 | | | | |
| Mobile | 204,021 | | | | |
| Waste | 11,471 | | | | |
| Water | 5,517 | | | | |
| | 302,343 | | | | |

**Santa Clara**
**Entrained PM2.5 Road Dust Emission Factors**

$E_{2.5} = [k(sL)^{0.91} \times (W)^{1.02} \times (1-P/4N) \times 453.59$

where:

$E_{2.5}$ = $PM_{2.5}$ emission factor (g/VMT)

k = particle size multiplier (g/VMT) [$k_{PM2.5} = k_{PM10} \times (0.0686/0.4572) = 1.0 \times 0.15 = 0.15$ g/VMT][a]

sL = roadway specific silt loading ($g/m^2$)

W = average weight of vehicles on road (Bay Area default = 2.4 tons)[a]

P = number of days with at least 0.01 inch of precipitation in the annual averaging period

N = number of days in the annual averaging period (default = 365)

Notes: [a] CARB 2014, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust (Revised and updated, April 2014)

| Road Type | Silt Loading ($g/m^2$) | Average Weight (tons) | County | No. Days ppt > 0.01" | $PM_{2.5}$ Emission Factor (g/VMT) | PM2.5 Emission Factor ($lb/10^6$ VMT) |
|---|---|---|---|---|---|---|
| Composite | 0.0431 | 2.4 | Santa Clara | 0 | 0.02091 | 46.1 |

**SFBAAB[a]**

| Road Type | Silt Loading ($g/m^2$) |
|---|---|
| Freeway | 0.02 |
| Major | 0.032 |
| Collector | 0.032 |
| Local | 0.32 |

**SFBAAB[a]**

| County | >0.01 inch precipitation |
|---|---|
| Alameda | 61 |
| Contra Costa | 60 |
| Marin | 66 |
| Napa | 68 |
| San Francisco | 67 |
| San Mateo | 60 |
| Santa Clara | 64 |
| Solano | 54 |
| Sonoma | 69 |

| Road Type | Silt Loading ($g/m^2$) | Fraction of Time on Road Type | Fraction of Total Silt Loading ($g/m^2$) |
|---|---|---|---|
| Freeway | 0.015 | 0.434 | 0.0065 |
| Major | 0.032 | 0.449 | 0.0144 |
| Collector | 0.032 | 0.054 | 0.0017 |
| Local | 0.32 | 0.064 | 0.0205 |
| ***Composite - Total*** | | ***1.00*** | ***0.0431*** |

**OR** **PM10 (lb/VMT)** = 0.0022lb/VMT x $0.043^{0.91}$ x $2.4^{1.02}$ = 3.1E-04 lbs/mi

**PM2.5 (lb/VMT)** = PM10(lb/VMT) x (0.0686/0.4572) = 4.6E-05 lbs/mi